RUBBER CHEMICALS

SAFEX—Accelerator for tires cured at 25-30 pounds.

MONEX—Accelerator for quick curing molded tubes—bright colored goods—crepe soles.

TRIMENE BASE—Accelerator for clothing—footwear—sundries.

HEPTENE—Accelerator for carcass of tires cured above 35 pounds.

ZBX-DBA—Accelerators for low temperature curing cements.

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This is a well balanced list of tried and true products. They are unsurpassed for quality, ease of handling and economy.

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Age
1928

The RUBBER AGE

VOL. 22, No. 12 MARCH 25, 1928

Rubber Market Further Unsettled By Latest Developments

American Rubber Pool Gets Additional $60,000,000 Credit for Further Market Operations—Statement from British Premier on Restriction Policy Expected by April 5—Efforts Are Renewed to Secure Some Form of Cooperation With Dutch

OUTSTANDING developments in the crude rubber situation during the last fortnight have been as follows:

The National Bank of Commerce in New York and the International Acceptance Bank, Inc., announced on March 18 that they had arranged an additional credit of $60,000,000 on behalf of the National Reserve for Crude Rubber, commonly referred to as the "American Rubber Pool." One-half of the new credit will be available immediately with the second $30,000,000 to be made available if and when needed.

Crude rubber prices, which had slumped to 24 cents in New York during the week of March 12, gained almost three cents on March 19 when the news of the new "pool" credit became known. However, a good part of this gain was lost on the following day's trading.

Premier Baldwin announced in London on March 19 that he expected to be able to make some announcement concerning the views of the committee now investigating the rubber situation before Parliament rises for the Easter holidays.

Meetings of Dutch rubber producers were held in The Hague in an effort to arrive at some basis of cooperation between British and Dutch growers. The principal effort is directed toward the establishment of a selling combine since Dutch governmental restriction is regarded as out of the question and the effects of voluntary restriction are doubted in view of the large areas of native rubber in the Dutch East Indies.

Reports coming from the East indicate a growing feeling against restriction in Malaya and Ceylon, although the possibility of immediate removal without serious results is doubted. In Ceylon both the Legislative Council and the Merchants' Chamber voted for the abolition of restriction. In Singapore a majority of the Chamber of Commerce voted similarly.

The credit of $60,000,000 arranged for the American rubber buying pool by New York banks is the second credit that has been made available to it. The first was for $40,000,000 and was made available for the pool late in 1926. According to testimony offered by J. J. Raskob before the House Judiciary Committee on the Newton Bill, the pool was buying and selling rubber all during 1927 and was controlling a large tonnage. This was understood to amount to as much as 50,000 tons.

The slump in the price of crude rubber since Premier Baldwin announced the latest restriction inquiry on February 8 had apparently put the pool in need of additional credits which the $30,000,000 to be immediately available was presumed to supply. The assumption that the pool would use this new credit at once in purchasing rubber at the low price and thus average down the price of its holdings led to a scramble in the rubber market on March 19. The establishment of the credit had been made known through the Associated Press on Sunday, March 18. Within the first hour of trading on the Rubber Exchange of New York the next morning 1,086 contracts were traded in, a record for the period. Before the day was ended, all records for Exchange trading had been smashed and prices had been carried up almost three full cents to close at 28 cents for March delivery. On the subsequent day the market sagged by almost two cents and has since been weakly maintained in the neighborhood of 25 to 26 cents.

The new credit for the rubber pool was understood also to mean an extension of its existence, the current agreement for its operation having been due, according to reports, to expire on April 1.

Although again closely questioned in the House of Commons on the probable report of the Civil Research Committee now inquiring into rubber restriction under his instructions, Premier Baldwin of the British government refused to attempt to anticipate the committee's findings. He did announce, however, on March 19 that he hoped to make a statement on the committee's work before the Easter Parliamentary recess which begins on April 5. This is taken to mean that the committee has speeded up its work in response to the insistent British demand that the present period of uncer-

WHITFORD RETURNS FROM EASTERN TRIP

Dr. H. N. Whitford, manager of the crude rubber department of the Rubber Association of America, Inc., returned to New York on March 20 from a ten months' investigation of rubber producing regions in the Middle East. He visited all the principal producing and marketing centers, spending the greater part of his time in the native rubber areas. He was particularly impressed, he says, by the producing capacity which the natives have built up. The native areas are more extensive than is generally believed, Dr. Whitford found. His reports to the Association have not been made public.

tainty be curtailed as much as possible. The committee has been actively proceeding with the examination of witnesses and printed data. Its intention to strive to make an early report is seen in the fact that opinions from influential bodies in the East have been secured by cable instead of waiting for the mails. This haste has been condemned in some quarters, although the desire for an early report seems to be universal.

While nothing has been given out by the committee, or by Premier Baldwin, who appointed it, as to the probable character of its report, numerous London dispatches have attempted to forecast the results. The most common opinion is that it will recommend a continuance of restriction, at least for the present, probably with a reduced pivotal price and a provision for abandoning the whole system as soon as the present large rubber stocks have been somewhat reduced.

Pending the publication of the report of the British committee, American rubber interests have been watching with interest the efforts of the British to get Dutch rubber growers aligned with them in some sort of a restriction program. In fact, the present British effort to "do something about restriction" is regarded in part as a threat to the Dutch that they must either begin to share the restriction burden or face the lower prices of an unrestricted market along with the British.

Dutch Consider Cooperative Selling

The principal efforts of the Dutch, however, have been along the line of cooperative selling with the British rather than any extension of the restriction system to the Dutch East Indies. The feeling against interference by the Dutch government is very strong, and in fact, the government itself has indicated that such a move is not in any way contemplated. Voluntary restriction by the Dutch growers in cooperation with a similar program by British growers is regarded as a possibility. The chief flaw in such a plan, however, is the large production of Dutch rubber by native growers who could admittedly never be brought in on any voluntary movement. Their non-cooperation would probably be sufficient to nullify in large part any voluntary restriction on the European-owned estates.

The Dutch rubber interests held their first conference on March 1 at The Hague, having been called together by a number of independent Dutch growers. The International Association for Rubber Cultivation in the Netherlands Indies could not issue the call owing to the fact that some of its members are already voluntarily restricting their outputs in cooperation with the British. Although British producers were not invited to the conference, numerous private conferences have taken place between the Dutch and British interests. The British appear to have recognized that the Dutch will permanently disfavor any governmental restriction policy but they hope to secure their cooperation in a system embracing a combined selling agency or pool which would, in substance, combat the American centralized buying by consumers.

Representatives of nearly all the leading Dutch rubber companies and others interested were present at The Hague conference, but the press was excluded. At the close, however, a communique was issued in which was expressed the desirability of cooperation. It was not felt necessary to call upon the Netherlands or Dutch East Indian governments for any action. A committee was appointed "which shall have for its purpose the care of the interests of Dutch rubber producers and eventual negotiations with foreign producers and consumers." J. N. Burger, the well-known Dutch rubber expert, was named as chairman and S. C. Knappert was made secretary. Mr. Knappert is also Secretary of the International Association.

To Review Entire Situation

It is understood that the committee will study the entire rubber situation and see in what way cooperation with the British producers may be had. Particular attention will be given to the possibility of establishing a central rubber sales office similar to the Dutch Sugar Producers sales organization. While the growers attending the first conference showed a willingness to cooperate with the British along lines different from the present restrictions on production, opinions were much divided. A number of the members voted against issuing any statement to the press since they were apprehensive over becoming committed in some way whereas they wish to remain entirely free.

The Dutch committee was to meet again on March 21 in one of a series of meetings at which opinion as to the best future course would be developed. Anything like precipitate action is unlikely and an announcement by the British government on restriction will probably precede any action by the Dutch.

There is no question that the Dutch are perturbed at the idea of British restriction being abolished, which is easily understandable when it is considered to what extent the British sacrifice has enriched them.

The oft-repeated statement that rubber restriction sentiment is much stronger in London than in the British colonies where the rubber is produced is apparently borne out by the votes which have been cast in various meetings in the East against a continuance of the policy, while in London the opposition has come chiefly from the press. In both Malaya and Ceylon strong sentiment against restriction, particularly in its present form, has become evident.

Of 72 votes cast in response to a questionnaire circulated by the Singapore Chamber of Commerce, 47 favored the removal of restriction with or without conditions, while the remainder were for the continuance of the scheme as at present in force or with modifications.

The Ceylon Legislative Council, after a lengthy debate on rubber restriction, adopted a resolution by a vote of 13 to 9 in which the system is called "wholly uneconomic for Ceylon."

The Ceylon Estates Proprietary Association, which represents practically the entire rubber industry in Ceylon with European ownership, suggests the replacement of the Stevenson Scheme by a "really comprehensive scheme providing for adequate control of supplies."

Planters meetings in Penang and Kuala Lumpur have advocated drastic revision of restriction or a final dropping of it if that cannot be effectively done.

Pivotal Price May Be Changed

A change in the pivotal price is the most commonly talked of revision which might be made in the restriction regulations as a result of the present inquiry. The pivotal price originally established was 30 cents, but in two successive changes this has been raised to 42 cents where it now is. Since the market price is now in the neighborhood of 25 cents and stocks show little tendency to decrease, it appears certain that additional releases will not be earned under the scheme for some time. At the present only 60 per cent of the standard production is exportable and since they have been on that restricted basis since last May 1, the planters are becoming increasingly dissatisfied.

One suggestion is that the pivotal price be lowered until a release of 100 per cent of the standard production could be earned and then retire the legislation. In any event, the Civil Research Committee is not expected to recommend outright cancellation. If they do so, the market would unquestionably slump greatly. Twelve cents has been mentioned as the price at which rubber might sell temporarily if all restrictions were removed, but such a conjecture is open to question.

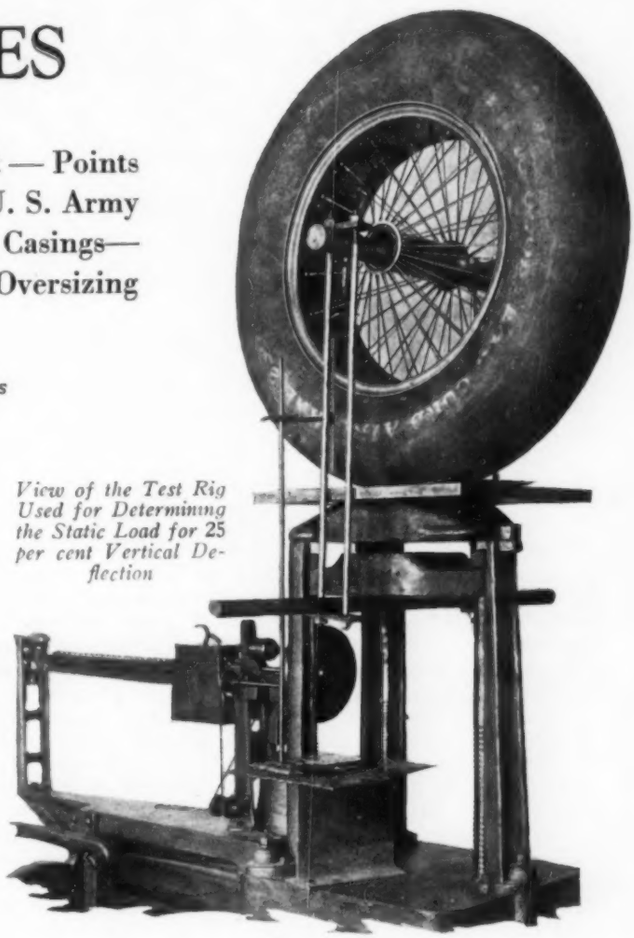
DR. HAUSER TO LECTURE IN UNITED STATES

Dr. E. A. Hauser, well-known German rubber technologist, has been appointed a non-resident Associate Professor of Colloid Chemistry at the Massachusetts Institute of Technology, Cambridge, Mass. His first course of lectures will be delivered from June 18 to August 28. His general subject will be applied colloid chemistry and he will take an opportunity to deal extensively in his lectures with the chemistry of rubber. Dr. Hauser is particularly well-known for his researches with rubber latex. He has previously visited the United States on several occasions when he has been a speaker at rubber technology meetings.

Standard Tires and Inner Tubes *for* AIRPLANES

Factors in Designing Tires for Aircraft — Points of Difference from Automobile Casings—U. S. Army Specifications—Physical Data for Airplane Casings—Load Limits — Drop-Center Rims — Oversizing

By CHARLES J. CLEARY
Textile Technologist, U. S. Army Air Corps



View of the Test Rig Used for Determining the Static Load for 25 per cent Vertical Deflection

THE HISTORY of the development of airplane tires and inner tubes, although quite interesting, is not generally understood. Accordingly, for the sake of general information, it is proposed to digress from the technical phases of the subject momentarily to give an insight into the reasons involved in their development.

Previous to 1920 clincher type tires and tubes were used almost exclusively on airplanes, both in this country and in Europe. There were a few instances of the use of straight-side tires and tubes, noticeably on Fokker and Nieuport airplanes, but in general, the use of clincher types was almost universal. As the development of aircraft advanced, clincher tires performed more and more unsatisfactorily, not because the material and workmanship were inferior, but because the weights of airplanes, as a whole, were increasing without provision being made for the use of larger tires. The performance of clincher tires as a consequence of this overloading was unsatisfactory, and was evidenced chiefly by "blow-outs" due to rim-cutting. A great deal of unsatisfactory tire performance could have been eliminated had they not been overloaded, but clincher tires are inherently unsatisfactory when under-inflated, or when subjected to side loading, as in the case of "drift" landings. From the nature of service and maintenance conditions, these faults are always present, which fact practically forced the development of airplane tires and tubes along the lines of the straight side or bead.

Design of Airplane Tires and Tubes

The general features which were considered in the design of airplane tires and tubes of the straight-side type were:

(a) The tire sizes should be such that they would cover the complete range of airplane weights, that is, two tires should be capable of sustaining airplanes ranging in weight from 500 to 20,000 lbs.

(b) The design should be such that "rim-cutting" would be eliminated, as far as possible, and that the effect of overloading the tire be such as to cause the least possible damage to the plane and the tire.

The design of an airplane casing differs in a number of features from the design of an automobile casing. An automobile casing must be designed to support the necessary load, have sufficient flexibility to accommodate the low inflation pressures used in the present balloon tires, and must have a tread of highly compounded rubber built to withstand the abrasive effects of the hard surfaced roads over which they operate. This highly compounded tread also necessitates the use of a "breaker" fabric and a "cushion" of lively rubber for the protection of the main fabric carcass of the tire and to allow for better adhesion between the tread and the carcass. An airplane casing functions on an entirely different type of surface, usually a soft or grass surface, and there is little or no abrasive action on its tread. In addition, the fact that the airdrome surfaces and the fields from which airplanes operate are often very soft and muddy, especially in the spring and fall, necessitates using a very flexible tire with low inflation pressures, to obtain the largest possible "snow shoe" effect to prevent the wheels from sinking to any depth in the surface. These two conditions make possible the use of a tire consisting of only the fabric carcass, with the usual straight side beads, and a very thin rubber tread which is extended to the beads to form the side walls of the casing. This type of construction insures a casing of minimum weight, which is always desirable in any form of airplane construction or in any piece of aeronautic equipment. The results of experimental testing and development of airplane tires led to the adoption by the Army of the following specification requirements:

The casings shall consist of superimposed layers of rubberized cord fabric, applied on the bias so that all plies have a uniform angle with reference to each other. These rubberized cord fabric layers shall be laid in such a manner that an equal number of plies shall run in each diagonal direction across the casing.

The cord fabric shall be a standard cotton tire fabric and the staple, as commercially determined, shall be not less than 1 1-16 in. long. The material shall be made from the best quality fiber.

The compound used in frictioning and skim coating the cord fabric shall consist of at least 85 per cent by volume of the best new plantation rubber, or its equivalent, suitably compounded and properly vulcanized to produce a compound which shall age well under reasonable service conditions.

The tread and the side wall shall have the following physical properties:

Tensile Strength (lb./sq. in.).....2400
Elongation, per cent..... 500
Set, per cent..... 25

All beads shall be of the straight-side type, reinforced with steel wire. One chafing strip weighing not less than 14 ounces per square yard shall be used on each bead.

The size, number of plies, minimum loads for 25 per cent. vertical deflection, minimum bursting strengths, and the weights of the casings shall conform to the values indicated in Table I.

TABLE I.

PHYSICAL DATA FOR AIRPLANE CASINGS

Size	*No. of Plies*	*Static Load for 25% Vertical Deflection-Min.*	*Service Inflation Pressure Lb.*	*Bursting Pressure Sq. in*	*Bead Width In.*	*Max. Weight of Casing Lb.*
28 x 4	4	1200	50	150	5/8	9.0
30 x 5	4	2000	55	155	5/8	13.0
32 x 6	4	2500	55	165	5/8	18.0
36 x 8	6	4000	60	180	3/4	28.0
44 x 10	8	6500	65	195	1	60.0
54 x 12	10	10000	70	210	1 1/4	82.0

Sufficient manufacturing tolerances are allowed in the dimensions of these casings, which are usually built about five per cent oversize, to permit efficient manufacturing methods.

The minimum strength of union (friction) on a specimen 1 inch wide shall be as follows:

Side Wall and Plies.....14 lbs.
Tread and Plies.....20 lbs.

All physical tests shall be made in accordance with U. S. Army Specification No. 20-1, which is the specification covering the standards methods of testing rubber materials.

The static load for 25 per cent vertical deflection shall be obtained by loading the wheel and tire assembly at the axle, with the tire inflated to the pressure indicated, and noting the load required to cause the specified deflection. The vertical distance from the rim flange to the supporting surface of the tire is considered as the distance equivalent to 100 per cent deflection. The illustration on the first page shows the test rig used in this determination.

The physical testing of airplane tires is carried out in essentially the same way as the testing of automobile tires with the exception of the road tests. The material tests are made in accordance with the generally accepted test methods, such as are outlined in U. S. Army Specification 20-1, previously referred to. A description of these tests is considered unnecessary in this paper.

The finished tires are tested as described above under Construction and Performance but there are a number of other interesting phases of testing which are worth considering. In general, the load-deflection performance of airplane tires is the factor which limits the use of tires of a given size, and maximum tire life can only be expected when this deflection does not exceed 25 per cent of the total vertical deflection which is possible. On this premise, the working loads of tires are specified, and it is possible, in this way, to cover practically all weights of military airplanes. Load-deflection data for tires are not limited to a 25 per cent deflection, however, as maximum performance, rather than maximum life, may be desirable under military conditions; consequently, load-deflection data must be available on all tires up to 100 per cent vertical deflection.

Fig. I shows the load-deflection data for standard airplane tires at standard service pressures. It will be noted that if the inflation pressure be varied for a given tire, the slope of the load-deflection curve remains the same, but the curve moves to the right or left, paralleling the original curve, as the inflation pressure is lowered or raised. It will be seen from this that the load required to produce 25 per cent vertical deflection can be varied between fairly wide limits, depending upon the demands made upon the tire.

In an earlier portion of this article the "snow shoe" effect was referred to, which will be discussed in the following. When a tire is stationary and is supporting a load, a certain portion of the tire is in contact with the supporting surface. The contact diagram made by the tire on the supporting surface is an ellipse, and the pressure per square inch on the supporting surface is the same as the pressure in the tire. The total load supported by the tire is equal to the area of the contact diagram in square inches, multiplied by the inflation pressure of the tire in pounds per square inch. This is rather a broad statement and is not entirely correct, as there are several other variables which should be considered. However, for all practical purposes, these variables may be disregarded. The

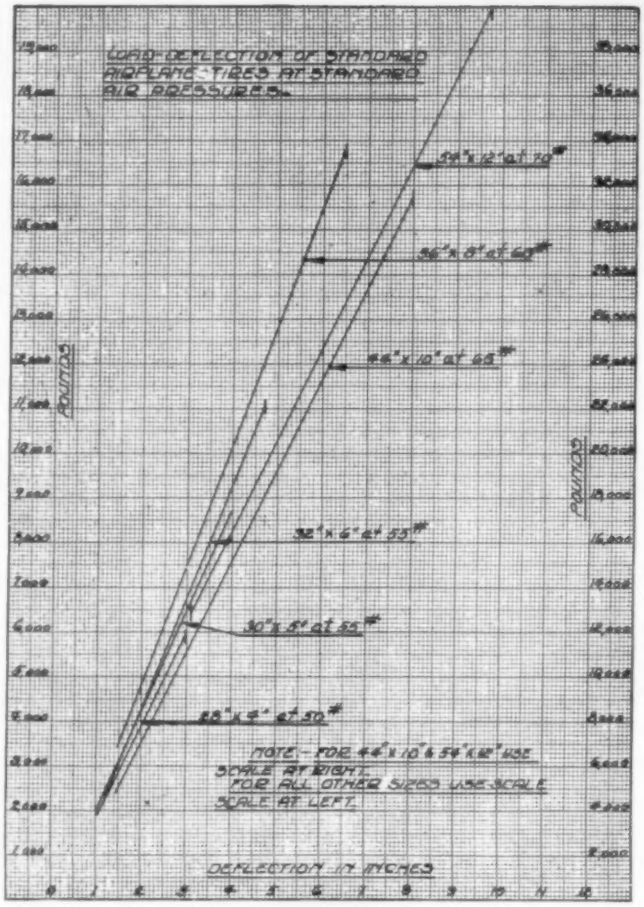

LOAD-DEFLECTION OF STANDARD AIRPLANE TIRES AT STANDARD AIR PRESSURES
54"x 12" at 70#
44"x 10" at 65#
32"x 6" at 55#
30"x 5" at 55#
28"x 4" at 50#
NOTE:- FOR 44"x 10" & 54"x 12" USE SCALE AT RIGHT. FOR ALL OTHER SIZES USE SCALE AT LEFT.
POUNDS
POUNDS
DEFLECTION IN INCHES

Fig. 1. Load Deflection of Standard Airplane Tires at Standard Air Pressures

true load which a tire will support is equal to the area of the contact diagram in square inches multiplied by the pressure in pounds per square inch in the tire, at the deflection caused by the load.

Consideration of the above will show that the area of the contact diagram can be increased by reducing the inflation pressure, or can be decreased by increasing the inflation pressure. In the first case, an increase in the area of the contact diagram is desirable when the surface from which the airplane is operating is soft, and minimum sinking of the wheel and tire is essential. In the second case, a decrease in the contact diagram is desirable when it is necessary to carry larger loads, and the surface is sufficiently firm to support these larger loads.

Another interesting phase of the question of airplane tire performance is the relation between the tire contact diagram, its load per square inch of tire contact, the supporting load, and the inflation pressure of the tire. This relation, worked out empirically, is true only between reasonable limits and when the tire being tested is circular in section. However, since this relationship is quite interesting, it is presented here.

TABLE II.

PRESSURE, LOAD, CONTACT RELATIONSHIP OF AIRPLANE TIRES

Size	*Inflation (Lb./Sq. In.)*	*Deflection (Per. cent.)*	*Area of Contact Diagram (sq. inches)*	*Load per sq. in. of Contact Area (pounds)*	*Deflecting Load (pounds)*
28 x 4	50	25	23.4	55.5	1300
28 x 4	50	50	45.1	53.5	2400
28 x 4	65	25	23.1	67.5	1560
28 x 4	65	50	44.0	66.0	2900
32 x 6	50	25	43.0	50.0	2200
32 x 6	50	50	87.0	54.0	4700
32 x 6	65	25	39.3	66.2	2600
32 x 6	65	50	86.3	69.5	6000
36 x 8	50	25	69.4	52.0	3600
36 x 8	50	50	136.9	58.5	8000
36 x 8	65	25	73.5	66.6	4900
36 x 8	65	50	140.6	71.2	10000
44 x 10	50	25	93.4	53.5	5000
44 x 10	50	34	150.2	55.5	8320

In a series of tests to determine this relationship, standard tires of 4, 6, 8, and 10 in. sections were used. The values, as tabulated, were actually measured in all cases and, while there are a few inconsistencies, the tendencies are well defined and can readily be seen. Table II shows the values obtained.

From the results as noted above, the following general hypothesis was made.

The load which a tire will carry is fixed by the area of the contact diagram and the inflation pressure of the tire, and is equal to the product of the area in square inches multiplied by the inflation pressure in pounds per square inch. For all practical purposes, it can be considered that the area is the same for equal tire deflections, regardless of the inflation pressure, but the load carried by the tire will be greater for the same area of contact as the pressure is increased.

The deflection of the tire is principally a flattening of the tread and bears a simple mathematical relation to the area of contact. The area of contact is an ellipse equal to

$$\frac{Pi \text{ A B}}{4}$$

where A and B are the major and minor axes of the ellipse.

The length of these axes can be approximated closely from the formula for the chord subtended by the arc of the segment of a circle. The length of the chord is equal to twice the square root of the deflection multiplied by the difference between the diameter and the deflection, or

$$A = \sqrt{h\ (d - h)}$$

where "d" for the major axis is equal to the overall diameter of the tire, "d" for the minor axis is equal to the sectional diameter of the tire, and "h" for both cases is the vertical deflection in inches.

The question of rim design is so closely allied to tire design that one cannot properly be discussed without including the other. The standard airplane rim is a one piece, drop-center rim as shown in Fig. 3. This rim is used on the 4, 5, 6, 8, and 12 in. tires. The original 10 in. tire is mounted on a truck type rim. Unfortunately, this rim was developed independently of the other rims, and by a different source, and although it is entirely satisfactory from a performance standpoint, it is different in principle, interferes with oversizing of the tires, and is heavier than necessary for a tire of this size. The development of a 10 in. rim of the drop-center type was undertaken and at the present time it is practically complete, and will be adopted as standard, superseding the original truck type rim.

The standard drop-center airplane rim was the composite design of a number of representatives of wheel and tire manufacturers and of the Air Corps of the Army, but the principle is not new, having been used in Europe for some years before its adoption in this country.

The various dimensions of the rim for different sizes of section are in accordance with Table III.

TABLE III.

DROP-CENTER RIM DIMENSION

Size	*A*	*B*	*C*	*D*	*E*	*F*
28 x 4	2.5	.625	.109	.44	.56	.59
30 x 5	2.5	.625	.109	.44	.56	.59
32 x 6	4.2	.75	.109	.56	.69	.71
36 x 8	5.6	1.0	.125	.75	.81	.84
44 x 10	6.0	—	.172	.78	1.06	—
54 x 12	8.4	1.25	.203	.75	.94	.97

Note: These dimensions are not in strict accordance with the dimensions given in the Tire and Rim Association Year Book, but they represent the Air Corps practice with reference to wire wheel installations.

It will be noted that the depth of the well, or drop center, is slightly more than the height of the rim flanges. This is to facilitate the mounting and dismounting of the tires.

The bead seat widths B, in the table, are so dimensioned that they can accommodate the next larger size of tire when over-sizing. It

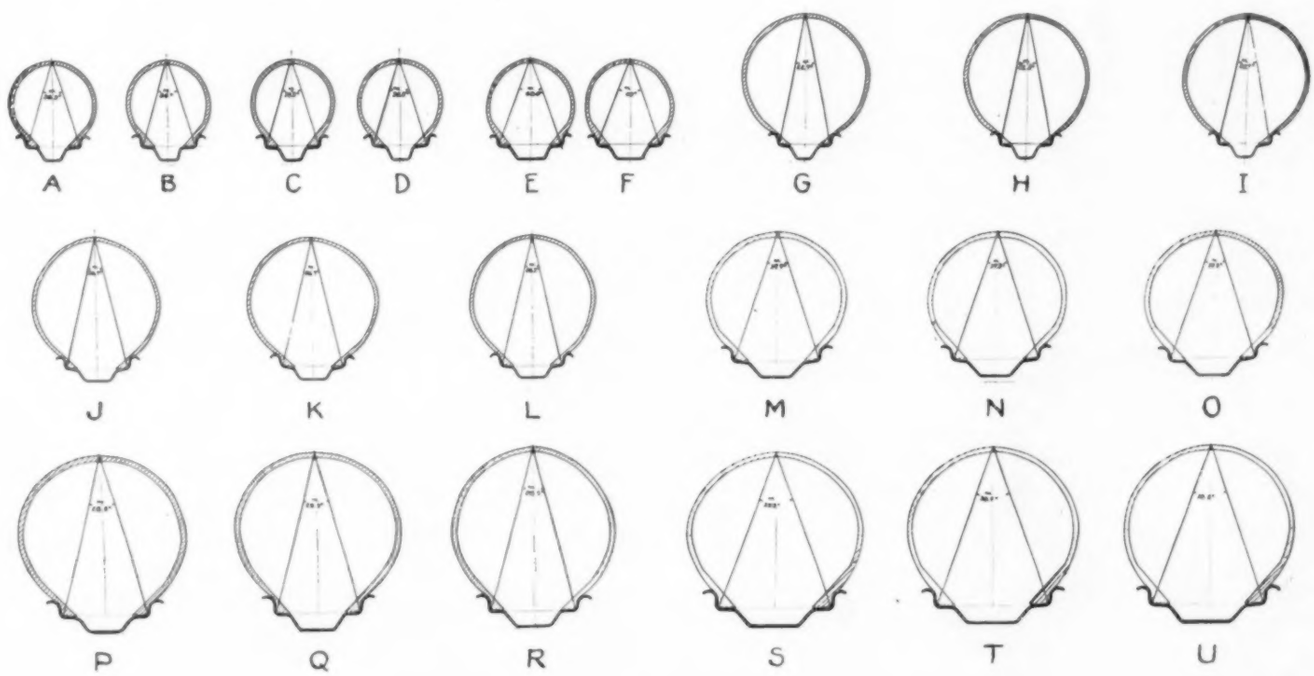


Fig. 2. Series of Drawings Showing the Effect of Oversizing Airplane Tires. Specifications Appear Below:

Tire	Casing Size	Rim Size*	Pressure in lbs.	Area of Cross Section in sq. in.	Angle of Stability
A	28x4	28x4(R)	50	13.91	34.3°
B	28x4	28x4(R)	60	13.97	34.0
C	28x4	28x4(R)	70	13.77	33.5
D	28x4	28x4(R)	80	13.72	33.5
E	28x4	28x4(O)	50	14.89	40.4
F	28x4	28x4(O)	60	14.95	40.0
G	32x6	28x4(R)	50	28.50	22.7
H	32x6	28x4(R)	60	30.10	22.5
I	32x6	28x4(R)	70	30.17	22.7
J	32x6	28x4(O)	50	30.33	26.7
K	32x6	28x4(O)	60	31.18	26.7
L	32x6	28x4(O)	70	30.81	26.5°
M	32x6	32x6(O)	50	35.69	37.7
N	32x6	32x6(O)	60	35.88	37.9
O	32x6	32x6(O)	70	35.60	37.3
P	36x8	32x6(O)	50	51.55	28.5
Q	36x8	32x6(O)	60	51.88	29.3
R	36x8	32x6(O)	70	51.88	28.5
S	36x8	36x8(O)	50	56.61	39.2
T	36x8	36x8(O)	60	56.63	38.7
U	36x8	36x8(O)	70	56.92	38.2

* (R) indicates "Redesigned," (O) indicates "Original."

is true that in some cases the width of the bead seat on the tire is less than the width of the beads on the rim, but service tess have indicated quite conclusively that such a condition does not detract from the performance of the tube or tire.

A = Rim Width
B = Bead Seat
C = Gage of Rim
D = Flange Width
E = Flange Height
F = Depth of Well

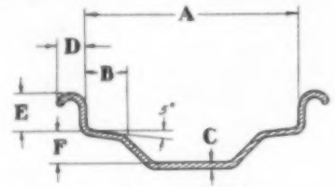


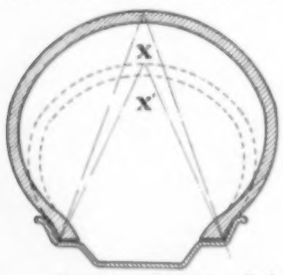
Fig. 3. Standard Drop Center Airplane Rim

The rim widths, A, were originally laid out to be 0.7 of the section of the tire, which would make the rim width of 4 in. rim, 2.8 in; the 5 in. rim, 3.5 in.; the 6 in. rim, 4.2 in., etc. This proved to be unsatisfactory in a number of cases, especially for the smaller sizes. In the case of the 28 x 4 tire, with an original rim width of 3.0 in. and an overall width of 3⅞ in. between the tips of the rim flanges, there was not sufficient "overhang" to the tire to protect the rim flanges when the wheels and tires were running over ruts, or on frozen ground. To correct this condition, the rim widths of the 4 and 5 in. rims were reduced to 2.5 in. and the other sizes were unchanged.

The question of oversizing tires is largely tied in with rim design, as well as with wheel diameters. Oversizing, in the case of standard Air Corps tires, is possible with the 5, 6, and 8 in. tires and, upon the completion of the new 10 in. tire, that, too, will permit of oversizing. The wheels on which the 4, 5, 6, 8, and the new 10 in. tires are mounted, are all 20 in. in diameter, although other factors such as rim width, depth of well, width of flange, etc., differ. This fact makes it possible to oversize as follows:

30 x 5 tire on 28 x 4 wheel
32 x 6 tire on 28 x 4 wheel
32 x 6 tire on 30 x 5 wheel
36 x 8 tire on 32 x 6 wheel
40 x 10 tire on 36 x 8 wheel

It was thought at first that oversizing two sizes, such as the 32 x 6 tire on the 28 x 4 wheel, would give an unstable combination, tending to roll the tire off the rim, due to pulling in the tire beads at the rim. An extended service test of this installation, as well as the 36 x 8 tire on the 32 x 6 wheel, indicated conclusively that such oversizing is not unstable but, in fact, is highly desirable. See Fig. 2. The Angle of Stability of a tire mounted on a rim is the angle formed by a line from the heel of each bead to the center line of the tire tread, as shown on Fig. 4. This angle on automobile tires is usually limited to a minimum of 28 degrees. Automobile practice was followed for some time with airplane tires until difficulties were encountered in service by the rim flanges bending when striking on



X' = Original angle 30°-40° on standard installation.
X = Oversized angle 21°-33°.

Fig. 4. Change of Angle of Stability as a Result of Oversizing

ruts or frozen ground, as mentioned previously. To overcome this difficulty, oversizing two sizes was resorted to, which resulted in reducing this angle to 21 degrees in some cases without any difficulty being encountered. It is plain that conditions of stability which hold for automobile tires do not apply to airplane tires. In this connection it can be stated as a principle of rim design for airplane tires that the rim with is preferably 0.5 to 0.6 of the tire section rather than 0.7, which is a common dimension for automobile equipment.

The design of airplane inner tubes on drop-center rims involves some considerations not included in the design of automobile tubes which are used on flat base rims. Due to the contour of the drop-center rim, which requires that the inner tube fit smoothly and evenly without wrinkling or buckling, it is necessary that care be taken in the measurements of pole diameter and tube length. With these considerations provided for, the flat width or the pole diameter of the tubes will be greater, and the mean tube length will be less, for tubes used on drop-center rims than for tubes used on ordinary flat base rims.

The result of experimental work and service testing of inner tubes has led to the adoption of the following U. S. Army specification requirements for inner tubes.

Inner tubes shall be of the endless type only.

The inner tube shall be made from the best quality washed and dried plantation rubber, or its equivalent, and shall be so compounded and vulcanized to produce a tube which shall age well under service conditions. No reclaimed rubber, oil substitute, or any material which shall tend to decrease the life of the tube shall be used.

TABLE IV.

CHEMICAL AND PHYSICAL PROPERTIES OF INNER TUBES

Type	*Class*	*% Rubber by Volume (min.)*	*Organic Acetone Extract (max. %)*	*Total Sulphur (max.) %)*	*Gypsum*	*Tensile Strength (min.) Lb./sq. in.*	*Ultimate Elongation (min.) %*	*Set Stretch 1 in. to 6 in. (max.)*
Pure Gum	A	93	5.0	7.0	---	1800	750	10
Antimony	B	85	5.0	7.0	7.0	2000	725	10
Compounded	C	80	5.0	7.0	---	2500	600	15

The tubes shall have the analytical and physical properties contained in Table IV. The tube wall thickness, tube length, weight of tubes equipped with valve lock nut, rim nut, valve cap, etc., shall conform to the requirements as shown in Table V. Each tube shall be properly fitted with one valve, Schrader 2791, or other approved air valve. This valve shall be equipped with a lock nut, rim nut, and valve cap, Schrader 880, or equivalent.

The splice shall be as strong as the body of the tube. The spliced ends shall be properly skived, so as to avoid an abrupt or unnecessary increase in the thickness of the tube at the splice.

All tubes shall be tested in accordance with Specification 20-1. (This specification covers the standard methods of testing rubber).

TABLE V.

PHYSICAL DATA FOR AIRPLANE INNER TUBES

Size	*Thickness Inches (min.)*	*Weight pounds (max.)*	*Tube Length Inches*	*Recommended Pole Diameter Inches*
28 x 4	.060	2.0	*35 to 35.25	2.50 straight
30 x 5	.060	2.5	**63.5 to 64.5	3.50 curved
32 x 6	.065	3.0	**64.5 to 65.5	4.25 curved
36 x 8	.070	5.0	**65.0 to 66.0	5.25 curved
44 x 10	.090	11.5	100 to 102	———
54 x 12	.115	16.75	123 to 125	8.75 curved

Notes:
*The Tube Length of the 28 x 4 on a straight mandrel, is measured on the deflated tube as a flat length, and is one half the true tube length.
**These dimensions are the inside circumference of the tubes which are made on curved mandrels, and cannot be measured flat. This dimension is obtained when the tube is inflated to 1¼ pounds pressure. The correct pressure is best obtained when the valve core is removed, and the valve connected to a mercury filled manometer.

Survey of Tire Dealers' Stocks

THE RUBBER DIVISION of the U. S. Department of Commerce, in cooperation with the Rubber Association of America, is beginning its regular spring survey of the stocks of tires in the hands of retail dealers. Questionnaires are now being sent to more than 100,000 dealers thought to have stocks of tires on hand. Replies are requested as of April 1. The fall survey is regularly taken as of October 1.

On April 1, 1927, the average tire dealer's stock was computed to be 70.6 casings and 120.9 inner tubes. A year before the average number of tires on hand was only 63.9 but the number of tubes was almost exactly the same as in 1927. It is believed that dealers' stocks are as heavy, if not heavier, this year than they were in 1927, due to liberal spring dating shipments. The Rubber Division will publish a preliminary report about April 19. The final report will follow about two weeks later.

THE HOOD "JOLIROGE" | MISHAWAKA "BONNIE" —exposed fastener | MISHAWAKA "BONNIE" —invisible fastener | GOODYEAR "BROWN BEAR" | HOOD "MANETTE" —no cuff | HOOD "MODE" —velvet cuff

Footwear Styles for 1929 Show Many Refinements

Better Styling is the Aim of All Rubber Footwear Manufacturers as the Vogue for Millinery Galoshes Continues—Announcements of the Various Companies Show Many Attractive New Numbers

THE rubber footwear manufacturers have been through a most trying season on account of the lack of good selling weather throughout the country, especially in the large centers of population. Despite this, practically all producers were running full time until January 1, although production has been considerably curtailed since that time. Business for next winter is now being booked, but details to make it possible for the manufacturers to start production are lacking in most cases, awaiting the final clean-up of this year's stocks.

Much apprehension was felt last year over the introduction of so many colors and patterns in gaiters, but this has been dispelled by the experience of this winter. This style element has proved to be the salvation of the business as the women have worn the trim and stylishly tailored footwear for warmth and style, and the time-worn weather hazard has been partly eliminated.

It was natural, however, that the first year of production and merchandising in millinery galoshes should bring about many mistakes. In general, too much variety was offered and many of the color and pattern combinations were not as harmonious with the trends in women's clothing as might have been desired. In the 1929 line we see a concerted effort on the part of all companies toward better styling. Many of the larger companies now employ stylists who co-ordinate the efforts of the designers and fabric buyers to produce the most pleasing effects in rubber shoes and to have them follow the prevailing color trends.

Prices have remained practically the same as a year ago, with the exception of miners' pacs and automatic fastener gaiters. In the case of pacs, the reduction undoubtedly reflects the conditions in the coal mining industry. Reduced earnings and short-time employment have created a demand for lower priced merchandise, and second quality, no-brand pacs have sold largely during the last year, making a reduction in the first line imperative.

Slide fastener gaiters, of which the "Zipper" was the forerunner in 1923, have proven very popular with the result that the volume production on the fastener device itself has made reduced costs possible. These savings are now being passed only to the consumer. Opinion is divided at the moment as to the future of fastener gaiters. While the ease of putting them on and taking them off is a big asset, especially with the misses' and children's shoes, it is not possible to produce such close fitting and neatly tailored shoes with this device. But, on the other hand, there is no trend back to the old fashioned four-buckle shoe for women, and there is a definite place for a high gaiter, aside from the low-cuff gaiter or "Raynboot" type. And producers are asking: "If not 'Zippers, what else'?"

Firestone Footwear Company, Hudson, Mass., has put out a very good answer to this question with the "Ritz-Imperial," one of the most distinctive numbers of tailored footwear on the market. This shoe is made of charmene worsted cloth in attractive colors and has in front a very neat flap of velvet with a cuff to match. Adjustment is afforded by a slide buckle and two snap buttons.

Goodrich, of course, continues to offer a most complete and extensive line of automatic gaiters. Their "Zipper" line shows nineteen different styles and colors. Besides the black all-cotton jersey, mottled brown cotton jersey is offered in the women's, misses' and children's. Red and blue and black and red mixed jersey is offered in the misses' and children's. Men's "Zipper Boots" are made in two heights, seven-inch and full height. In the worsted jersey numbers, Lo-Zipper Boots in women's and misses' are made in black, brown wool tweed, grey wool tweed, pine green wool jersey, and rust wool jersey. Cotton numbers in the same shoe carry brown and grey angola, and a new mixed cotton jersey specially priced at $2.10. Women's gaiters are lined with ecru colored net and the misses' with fleece. Full height Zippers are made in tobacco brown wool jersey, and cruiser grey. Two new numbers are the "Lo-N-Hi Zipper Boot" of the featherweight fit-all type, made for slim legs only, with a fancy rayon lining. This gaiter can be worn as a high gaiter, or turned down to be worn as a cuff gaiter if desired. The Ne-Zipper is also of the featherweight fit-all type in tobacco brown and glove suede, with a maximum height of 17 inches, making it full protection against the most stormy weather.

Converse Rubber Shoe Company's line features a new shade of tan, possessing character and richness. The "Bob-

bette," one of the first practical high gaiters which employes neither buckles nor slide fastener, has been re-designed with many refinements and improvements. The high quality cuff gaiter, the "Alsace," made with worsted dress serge in colors, is now made of this material throughout, the velvet cuff being omitted. The "Chic" line of cotton cuff gaiters is made with a new lightweight construction which should make the line very popular for spring and fall wear. More and more attention is being paid to the matter of weight in fancy gaiters by all manufacturers, especially since the shoes have become a style proposition. Two special feature numbers in the Converse line are the "Poncho," a tan all-rubber cuff gaiter with a plaid cuff, and an automatic fastener novelty number for misses and children made from woolen plaid.

Many manufacturers have purposely delayed putting out their fashion numbers so that they can watch the trends. The Beacon Falls Rubber Shoe Company announces in their broadside as follows: "We do not illustrate any of the Fall 1928 novelty footwear numbers on this broadside for the reason that our broadsides are used exclusively for exhibiting only those styles that are in stock and can be shipped immediately on receipt of the order." This emphasizes that novelty and fashion footwear is a made-to-order proposition and has presented to the rubber footwear manufacturers new problems all along the line. Beacon novelty numbers are called "Smartics," and the company has a smooth-running automatic known as the "Nifty."

Refinements in the Goodyear Line

The Goodyear Rubber Company, of Middletown, Conn., is showing many refinements and improvements in the "Gold Seal" line, which has been merchandised by the company since 1872. A new hard service work rubber known as the "Brown Bear," is offered at $1.50 wholesale. This shoe carries a double ribbed vamp with black diamond sole, garnet lined, and is made over two lasts, one specially wide to cover the work shoes. In the novelty gaiter line, two shoes of special Goodyear design are offered, the "Debutante," in rayon and wool jersey, and the "Chic" in cotton jersey. These shoes carry two snaps in the front with the cross strap construction.

The Phillips-Baker Rubber Company, Providence, R. I., will have in its 1929 line some numbers of exceptional design. The Vanitee cuff gaiter which enjoyed a large sale last season, will not be materially changed in design but will show important fabric changes. A white fabric has been selected for rich simplicity which, with black or brown background, gives the necessary note of contract. In the Ranyday shoe (splashguard) Phillips-Baker is introducing a somewhat radical departure in the styling of rubber footwear. A fleur-de-lis design in the back protects the stocking and it comes in colors to harmonize with stylish colored raincoats. The Snapee (Trimfit) has been designed along the same colorful lines as the Ranyday. It includes the features of a cuff gaiter plus the style of a shoe that fits trim and snug fore and aft. The design of the American Girl number includes the feature of a cuff gaiter with the added feature of a convertible cuff which may be tipped up or worn as a regular cuff.

The Hood Rubber Company lists many new features in its 1929 line as follows: An Irrigation Boot, lighter in weight and more flexible; Ike Walton Boot, an extra high sporting specialty for spring trout fishing; an English Wellington Boot, a smart dressy boot for women which has had such a big vogue abroad; Snotite Boot, a new Hood special for the youngsters which is a bright finish black short boot specially constructed with a stocking top; a new carbon black sole, with a white tread on all pac shoes; Fex-Over, a new men's shoe containing no buckles or slides and made especially for the motorist or man about town who wants something neat and warm with the added feature of quickness off and on.

Hood Line of Novelty Gaiters

In novelty gaiters Hood has a very complete line, including automatics in full height and seven-inch, "Joliroge," a smart pirate boot with a fastener on the side, and "Splasher," a buckle shoe for the kiddies made from tan embossed rubber in reptile pattern to imitate leather. Then follows a full line of cuff gaiters in worsteds, woolen tweeds, and mercerized cotton combinations, which are very pleasing and distinctive.

La Crosse Rubber Mills Company, La Crosse, Wisconsin, the rubber footwear factory, located farthest west in the country but situated in an excellent snow belt, announces that it has been their aim to make a line of gaiters that are modish to the highest degree and at the same time decidedly practical. On all autogaloshes and novelty gaiters the cuffs have the regular overcast stitching which prevents frayed edges and adds to the appearance.

All La Crosse gaiters have a net leg lining and a fleece toe lining to protect the toes and the instep from the cold. This affords an interesting compromise and is apparently a wise solution of a problem which has been bothering the footwear manufacturers more or less during the past two seasons. Originally gaiters were fleece-lined throughout, but feminine users, especially in the cities, complained of the shoes being too hot. Then the change was made to all net lining, and during severe weather they proved to be too cold. This change to half of each may solve the problem for all concerned. A new type of two-strap gaiter offered in the La Crosse line shows the trend toward a high gaiter not employing a slide fastener, although La Crosse has a very complete line of fastener gaiters which work very smoothly, some types having the fastener invisible.

Mishawaka Rubber and Woolen Manufacturing Company, Mishawaka, Indiana, is one of the oldest and most

Servus "Black Diamond" Gutta Percha "Cadette" Gutta Percha "Modette" Dominion-U. S. Rubber "Gaytee"

BEACON FALLS "AMY" TYER "NO. 6814" MINER "DAINTEE" LACROSSE "LORETTA" GOODRICH "LO-ZIPPER"

successful rubber footwear concerns in the country. Starting originally in 1868 manufacturing flannels, all knit wool boots were added in 1887, when the familiar trade-mark "Ball Band" was originated. Rubbers were first made in 1898 and lightweights added in 1916. Now the line includes all kinds of rubber footwear, including tennis, woolen footwear, hosiery, sport shoes, leather work shoes, all made under one roof which makes the factory unique not only in the rubber industry but in manufacturing in general.

In a recent survey made by advertising experts, brand preference in rubber footwear was not particularly marked, but "Ball Band" had the highest score. This undoubtedly is due to the distinctive trademark, national advertising, and quality merchandise, which is sold only to the retailer and at one price for all.

In the 1929 Ball-Band line there are, perhaps, fewer innovations than in some of the others, but it contains everything to fill the wants of the trade from the farms and rural districts, as well as some smart lightweight Monopul artics for fashionable city trade. A new feature number is an unlined light rubber, the "Ariel," which weighs but three ounces so that it can be carried in the handbag. This is made in moire finish, black or tan.

Tyer Slide Fasteners on Side

Tyer Rubber Company, Andover, Mass., has a very complete line for a small company, covering boots, gaiters, artics, and light and heavy rubbers. Practically all the light goods are made by the hot-press method, the lining and upper being calendered together, eliminating seams and joints in the shoes, the reinforcing parts being put on outside. Tyer's slide fastener gaiters operate entirely from the side, which makes them look very neat on the foot. In addition to the "Tyer" line there is the "Economy" line, moderately priced to meet the demand for this type of merchandise.

To date the United States Rubber Company has sent out little to the trade except price lists, probably indicating that some of the fashioned shoes are still in the process of development which is more or less generally true throughout the trade. Winter footwear production is now concentrated in the Boston Rubber Shoe, American Rubber, Lycoming, Woonsocket, Candee, and Goodyear Glove factories. "Gaytees," a new type of gaiter with a Queen Ann collar effect, is one of the features of the new line.

Servus Rubber Company, Rock Island, Illinois, announces an increased production program for 1929, with new styles and new service as a result of these facilities. The company's line now includes a line of red boots, all-rubber gaiters, work rubbers, and novelty gaiters. The latter are largely of the cuff type made in blue mottled, salt mottled, fawn, and black.

It is interesting to note that Canadian styles for 1929 contain much greater variety in colors than those in this country. The Gutta Percha and Rubber Co., Ltd., of Toronto, is featuring beige colored soles on many shoes. In novelty gaiters, the line is one of the most complete and extensive on the market, offering a line of "Gloshettes" in cuff, automatic, buckle, and three-snap types. Among the colors are beige, silver black, silver fawn and gray, purple and gray gold heather, and rose heather. A new light rubber known as the "Petite," is offered in black and beige, with harmonizing heather net lining with an embossed upper.

The handsome catalog of the Miner Rubber Company, which, by the way, fits into a pocket on the Miner footwear calender, shows an impressive assortment of staple numbers with which their Daintee and Snappy cloth gaiters are in pleasing contrast. The former has two loops and one strap, while the Snappy number is a lower one, having the strap only. The company also shows the Whizz line of automatic fastener overshoes.

Dominion Rubber Co., Ltd., has many styles which resemble American numbers, such as the "Flapper" along the lines of the Cambridge "Captain Kid," and the "Cloud," which is similar in construction to the Goodyear "Debutante." A full line of "Gaytees" is offered also. All Canadian companies concentrate on heavy goods, owing to the more severe and prolonged winters in their territory. The Kauffman Rubber Company, Ltd., Kitchener, Ontario, and Northern Rubber Company, Granby, apparently run more on the staple numbers and do not go into novelties as much as the larger companies, which is a good policy for the smaller producer.

U. S. Rubber Company's Plantations

THE rubber plantations owned by the United States Rubber Company comprise a total area of 135,053 acres, of which 104,232 acres are located in Sumatra and 30,821 acres in Malaya. Of the total area, approximately 87,000 acres have been planted, of which approximately 4,500 acres were planted during 1927. Of the present planted areas, 54,053 acres are in bearing, including 2,225 acres that became mature during 1927. The remainder of 33,000 acres will come into bearing progressively during the next six years. Production amounted to 25,677,000 pounds for the year 1927, an increase of 2,768,000 pounds over 1926.

The net earnings of the plantations in 1927 amounted to approximately $4,000,000, after providing adequate reserves for depreciation of plant and equipment, amortization of the cost of development and foreign income taxes. The earnings in 1926 amounted to $6,000,000. The plantations are handled through a subsidiary company, United States Rubber Plantations, Inc.

Rubber received from the plantations is taken into account by the United States Rubber Company at current market prices and the plantations companies are credited in open account.

The rubber plantations represent a total investment of $33,113,236. Of this amount, $18,000,000 was invested by the United States Rubber Company, $4,571,830 was advanced in open account by the United States Rubber Company, and the remainder, amounting to $10,541,406 was provided from the operations of the plantations companies.

Rubber Company Profits Increase

Although Most of the Well-Known Companies Showed Better Net Incomes in 1927, the Rubber Industry Still Falls Short of Real Prosperity

IN many respects the final financial statements of the leading rubber manufacturing companies for the year 1927 show a fairly satisfactory condition within the industry. Substantial profits have been made in most cases, in the face of lower prices for almost all lines of rubber goods. Tire prices, in fact, went to the lowest level in the experience of the trade. The year was also marked by a sharp drop in automobile production and in the case of Ford, a complete cessation of activities, resulting in a huge loss of sales for tire manufacturers furnishing original equipment. A factor which contributed greatly to the good returns of the various companies was the comparative stability in the price of crude rubber, which in the face of lower prices for finished goods, did not necessitate a further loss by having to write off abnormally high depreciation in rubber inventories. The most encouraging feature of the year was the fact that practically all the rubber companies reported an increase in the total volume of unit sales.

The accompanying table shows the relation of gross sales to profits for the five largest rubber manufacturers, commonly referred to as the "Big Five." The profits listed are those remaining after interest and other charges have been deducted, but before preferred dividends have been met, and include any reserve which have been set aside. A percent relationship between gross sales and such profits is also given. The table gives the same figures for the last three years by way of comparison. In view of the fact that the five companies listed do more than half of the total business in rubber manufactured goods in the United States, these figures are fairly representative of the general condition of the industry.

While gross dollar sales of the individual companies have remained high, they do not exceed, except in the case of the B. F. Goodrich Co., the sales during 1926. Profits, however, with the exception of the U. S. Rubber Co., have been greater, and in the case of three out of the five companies, the percentage relationship between gross sales and profits is higher than the preceeding year. This would indicate at the outset a high degree of efficiency in management, especially in the face of the adverse conditions in the marketing field, as mentioned above.

The total gross sales of the "Big Five" in 1927 were not quite equal to those enjoyed in 1926, which was a high record year. The actual decrease in dollar sales was a fraction under five per cent. However, the total profits of the group show an increase of approximately 40 per cent over 1926. The percentage relationship of profits to sales was 6.7 per cent, an increase of 2.5 per cent over 1926.

But these figures on rubber company profits are misleading, it must be admitted, by reason of the juggling of special reserves and contingent funds which are set up and dissipated or returned later to surplus. Such operations are so numerous and involved that it is practically impossible to take them correctly into account from the published statements. With regard to this situation the well-known Standard Statistics Company said in a recent bulletin:

"To prove any statement relative to the profits of a tire producing company by precise figures is virtually impossible. No industry habitually juggles its figures about with such gay abandon. 'Contingency', 'inventory' and 'general' reserves appear and disappear in and from successive annual balance sheets as though they were so many rabbits being lifted in and out of a plug hat by a skilled magician . . . . The result is that, no matter how much labor is expended in analyzing balance sheets and income accounts and striving to construct a continuous statistical record of profits, the reward is more often an approximation of the truth than an exact statement of the facts."

The total gross sales and profits of the individual companies for the last three years gives a broader view and shows the relative position of the separate companies at the end of the three-year period. In the matter of sales volume Goodyear has surpassed all the others and also shows the highest aggregate profits for the period. Firestone has made the best record from the standpoint of percentage relationship between profits and gross sales. However, the average profits for the three-year period for all tire companies is only 6.8 per cent, a figure which would seem too low to put the industry in any highly prosperous position. Taken individually, and in the light of conditions existing during 1927, the companies' statement show a better condition than when taken collectively and compared with other years.

Goodyear increased unit sales of tires 15 per cent during 1927 but dollar sales of all products were 3.5 per cent less than in 1926. The ratio of assets to liabilities at the close of the year stood at 7.3 to 1. B. F. Goodrich Company's sales for 1927 were the highest in the history of the company. The profits listed includes $1,000,000 which was set aside for reserves.

Firestone Tire & Rubber Company also reported 1927 as the record year in the company's history and while gross sales were slightly under the 1926 figure, unit sales increased substantially. Current assets in relation to liabilities stood at ratio of 7 to 1 at the end of the fiscal year. Fisk Rubber

(Concluded on Page 666)

SALES AND PROFITS OF THE FIVE LARGEST RUBBER MANUFACTURING COMPANIES

(Profits shown are after interest and other charges, but before preferred dividends or reserves)

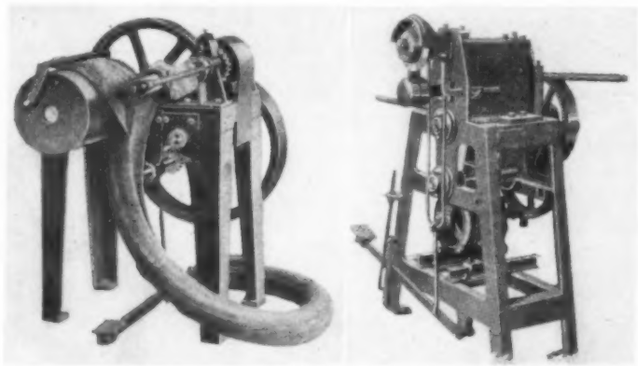
	1925			1926			1927			Three Year Total		
Company	Gross Sales	Profits	Per Cent	Gross Sales	Profits**	Per Cent	Gross Sales	Profits**	Per Cent	Gross Sales	Profits	Per Cent
U. S. Rubber	$206,473,737	$17,309,870	8.4	$215,528,309	$8,761,869¶	4.1	$193,442,945	$ 6,232,052¶¶	3.2	$615,444,991	$32,303,791	5.2
Goodyear	205,999,820	21,005,898	10.2	230,161,536	8,799,138	3.8	222,178,540	16,635,666	7.4	658,239,846	46,440,702	7.0
Goodrich	136,239,526	16,744,447	12.3	148,391,478	5,065,110	3.5	151,684,960	12,780,306	8.4	436,315,964	34,589,863	7.9
Firestone*	125,597,998	12,800,412	10.1	144,397,000	7,622,339	5.3	127,696,759	13,780,966	10.8	397,691,757	34,203,717	8.9
Fisk*	74,900,373	6,108,906	8.1	68,051,739	3,354,431	4.8	72,404,002×	2,620,721	3.6	215,356,114	12,084,508	5.6
Total	749,211,454	73,969,533	9.9	806,530,062	33,602,887	4.2	767,407,206	52,047,711	6.7	2,323,048,672	159,622,131	6.8

*Firestone fiscal year ends October 31. Fisk fiscal year ended October 31 until 1927, when it was changed to correspond with calendar year. **Without deduction of reserves taken into income account. ¶ Does not include $6,000,000 profit from plantations. ¶¶ Does not include $4,000,000 profit from plantations. ×Covers 14 months due to change in fiscal year.

Modern Practice in Salvaging SCRAP RUBBER

Improved Equipment and Better Methods of Handling Scrap Have Had Much To Do With the Improvement in Quality of Reclaimed Rubber—Some Scrap Presents Special Problems for Effective Disposition

THE improvement in quality and uniformity of reclaimed rubber in the past few years is in no small measure due to better methods for handling and preparing scrap for the process of reclaiming. These have in part been necessitated by the narrowing margin of profit which makes it imperative that the largest possible yield be obtained from scrap at all times. The price of scrap, particularly tires, cannot go below certain limits on account of costs of collection and freight charges. Too low a price automatically cuts off a portion of the supply and sets in motion economic forces which gradually bring the level back to normal.



Two Reichel and Drews Machines. Fabric Puller on the Left. Bead Cutter, with Motor, on the Right

For scrap purposes, the discarded automobile tire is composed of three parts, tread, carcass, and bead. The bead must be removed and discarded before the scrap can be reclaimed, as it contains wire and hard rubber compounds which cannot be blended with the rest of the product. Obviously, as the tires are first purchased whole, the removal of the bead, whether done by scrap dealer or reclaimer (most reclaimers buy beadless tires) is an important operation in determining the yield of workable scrap to be obtained. There are several types of bead cutters on the market which are built for this operation.

Reichel and Drews, Chicago, have three machines for this operation: No. 1 with a belt drive is controlled by a foot treadle or lever pivotally attached to the frame, the tire is slipped over the lower roller, and when the foot treadle is depressed, it will automatically revolve, forcing the knife through the fabric and cut off the beads from any size or style of tire. The company's No. 2 bead cutter is a commonly used type of cutter which will cut tires up to 5", No. 1 machine being recommended for larger and heavier tires. In operation a tire is slipped over the lower roller, and when the foot treadle is depressed, the knife will cut off the beads and turn the tire at the same time until the bead is cut off. Guides are also provided for guiding the tire while the bead is being cut off.

Since the advent of 8, 12, and even 16-ply truck pneumatics, they have presented more or less of a problem to the reclaimer who very often finds that his regular equipment is not adequate to take care of these large sizes. Yet they are good for rubber yield, most tires of this class being first quality and rich in carbon black. One reclaimer first slices them into sections on a large alligator shear, then removes the beads from each section by using a band saw.

Not all worn-out tires find their way back into tire reclaim. Tires which are completely worn out, that is the tread worn through to the carcass and the carcass plies badly scuffed and torn, are discarded as worthless, as it does not pay to reclaim them. Tires with good carcasses are often pulled down and blow-out patches, and so-called tire boots, are made from them. A series of simple yet efficient machines are used in the manufacture of these products. First, it is necessary to separate the rubber and the fabric which is done by a fabric puller. This machine operates by winding the fabric on one arbor, and the casing on a second arbor, and can be instantly stopped without rolling back. More or less plies can be opened easily. An auxiliary machine, known as the tire opener, is used for starting the separation of the tread and carcass.

The next process is to cut the fabric into suitable lengths. A cutting knife or power cutter is used for this operation. You now have a rough boot which must be skived or tapered at the edges. A skiver is used for this work which neatly and quickly skives and tapers the edges of the boots, which are now ready for the market as many of them are sold in this form.

For a better grade of boot, the fabric must be trimmed to different widths to go with different sizes of tires. Machines known as fabric trimmers are available for this work. The fabric must also be buffed to clean off the cement. Any type of rotary wire brush machine will do this work effectively.

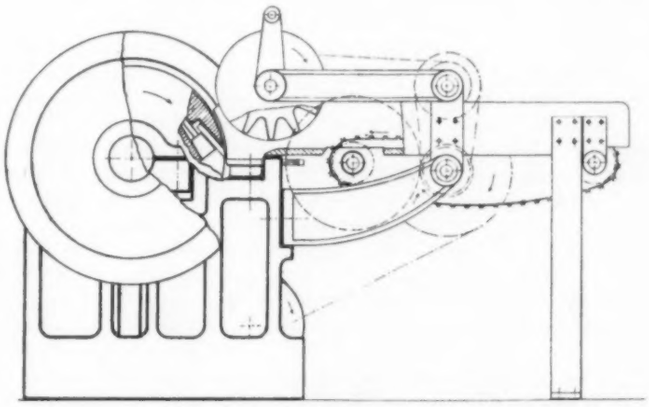


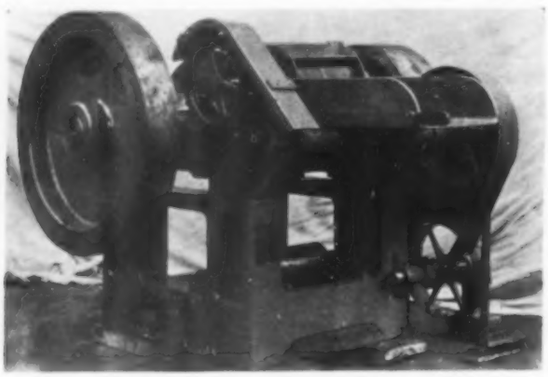
Diagram of Tire Chopper Lately Developed by Taylor, Stiles and Company to Displace the Scrap Cutters

Treads removed from tires processed for boots and

patches are known as dykes and are used to make a grade of caustic tire reclaim, although very often they are blended with whole tire stocks. Tires used to make reclaim are first ground into small pieces either on a rotary cutter or on a cracker, this being the most widely used method today.

Footwear scrap is much less in demand today, although shoe reclaims have their uses in certain branches of the industry such as shoe soling stocks and auto topping compounds. Black rubbers and boots bring the highest price, whereas tennis and arctics are practically worthless owing to the low rubber yield.

Solid tires are used to make a tough, harsh stock which finds favor for certain uses. In preparing these for reclaiming, care must be taken that none of the hard rubber base is left in the scrap before it goes to the crackers and cookers as this would spoil the consistency of the product.



Rubber Scrap Cutter of Taylor, Stiles & Co.

A solid truck tire cutter is used to cut the tire tread from the rim and the base. The tires are then cut into sections on an alligator shear and ground fine before devulcanizing.

Scrap inner tubes are graded according to color and rubber content, so-called pure gum tubes commanding a premium over compounded tubes. These are easily ground on a cracker for devulcanizing.

Footwear and mechanical goods plants yield many grades of scrap today which present more or less of a problem as to their disposition. In footwear, for example, there is uncured fleece lining trimmings which very often cannot be used back into the rag stock batch especially if the mill is not equipped with a cutter or grinder to reduce the scrap to a workable state. This scrap, together with rubber pasted tennis cuttings, has practically no sale, although some attempts have been made to shred it for mattress filler. Cured packing room trimmings find a restricted sale to reclaimers who blend the scrap with shoes to make shoe reclaim. Heel and sole overflow stocks are usually reclaimed with oil and used back into the compound. Uncured friction tape trimmings, and carriage cloth scrap occasionally find a market with a footwear mill which does not produce enough scrap from its own cuttings for rag stock. A great many low grades of fabric and rubber scrap, cured and uncured, find their outlet on the dump or are burned as refuse, and will probably continue to be so disposed of in view of the present rubber market.

Airbags, which were once burned up, have had a restricted outlet to make cheap reclaim for use in low-grade tires, but the trouble with this grade of scrap is its lack of uniformity as the life of each bag varies considerably. Hard rubber scrap is ground up to make hard rubber dust which finds a ready market for the makers of hard rubber products. White scrap is at a premium as white tires have been out of the market almost ten years now, although the demand for a good white tire reclaim is always steady. Reclaiming mills which are able to cull a supply of this scrap from their collections have no trouble in disposing of the reclaim at a good price, the present market price being almost twice that of black tire stock.

Special lots of scrap, some of them rich in rubber content, do not find an outlet commensurate with their worth for the reason that the supply is too small and restricted. Reclaimers must be assured of a steady supply and uniform grading to produce the uniform product demanded by the rubber trade today.

Rubber Company Profits Increase

(Continued from Page 664)

Company showed a decline in profits but increased the value and unit volume of sales over 1926. The report this year, however, covers 14 months owing to the change voted by the board of directors in June, 1927, in the fiscal year from October 31 to the end of the calendar year.

The one of the "Big Five" showing the least favorable statement is the United States Rubber Company. While a profit is shown for 1927 it was made at the expense of drawing more than $16,000,000 from the reserve funds of the company and surplus accounts of the U. S. Rubber Plantations Company. Had not this reserve been available, a loss on operations for the year would have occurred. Details of the annual report of the U. S. Rubber Company are given elsewhere in this issue of THE RUBBER AGE.

A policy of expansion was reported in practically all the annual statements. The year saw the British Goodyear plants at Wolverhampton, England, and Sydney, Australia, go into operation and construction nearly complete at the new Los Angeles plant. Further acquisitions to the company's rubber plantation holdings were made in Sumatra. Firestone broke earth for the construction of their California plant and purchased a site for an English factory in addition to going ahead with their plantation developments in Liberia. Goodrich increased its plant capacities in California, England and Canada.

The generally encouraging financial condition of American rubber manufacturers other than the "Big Five," as reflected in their annual statements for 1927, also indicates a sound business position in practically every case. Hood, Dayton, Kelly-Springfield, Seiberling, General and Mohawk all showed profits and in most cases, higher gross sales in both dollar value and unit volume. Kelly-Springfield does not publish an annual sales figure but shows a net income of $357,741 after facing a loss of approximately $3,450,000 in 1926. Hood Rubber Company reported a net income of $1,017,319 for the nine months ended December 31, 1927, as contrasted with a loss of $1,282,473 for the last fiscal year which had ended March 31, 1927. Sales during the period totaled $28,527,426. Mohawk Rubber Company's sales for 1927 totaled $5,702,372 with unit sales of tires running 120 per cent over the previous year. A net profit of $631,171 was reported in the face of a deficit of $350,000 which was standing at the close of 1926.

General Tire & Rubber Company, which in 1927 enjoyed the best year in its history, reported sales amounting to a little less than $24,000,000, representing a net gain of 21½ per cent, and net earnings of $2,233,778. Lee Tire & Rubber Company reported sales of $10,175,169 and net profits of $784,257. The fiscal year was changed, however, to end on October 31 and the figures are therefore for ten months only and are less than those reported for the calendar year 1926.

Mason Tire & Rubber Company showed a loss of $472,897 in spite of sales totalling $7,483,928. The company suffered chiefly from the loss of Ford business during the year. Miller Rubber Co., while showing a loss of $392,632, ended the year in a fairly strong position with a ratio of assets to liabilities of 3 to 1.

THE GENTLEMAN FROM MINCING LANE
reports current opinion in London's famous rubber market in every issue of THE RUBBER AGE

The London Letter

The Gentleman Talks About Unvesting a Vested Interest

LONDON, March 12th, 1928.

SOBER reflection a month after the British Government's announcement of the rubber restriction inquiry has brought home to the British rubber industry the fact that a catastrophe hasn't taken place after all. It is true that rubber prices have fallen about 25 per cent and plantation share values are off in the neighborhood of 15 per cent, but neither shares nor raw rubber have gone lower and there is still a reasonable margin between production costs and sales prices. Uncertainty still rules as to the future, but maybe something better, at least more reliable, than governmental regulation will come out of the investigation.

The only hope in that direction is that the Dutch, who have just set up one of the numerous committees to investigate this situation, can be brought to see the need for voluntary cooperation in a restriction scheme with the British. One thing that does seem to stand out definitely is that Dutch planters will have nothing to do with Dutch governmental restriction.

It is plain that the position in 1928, when the Dutch are again approached by the British, is very strikingly different from the situation in 1921 and 1922 prior to the institution of the Stevenson Scheme. Today the British rubber growing industry and the British government, if and when they propose to remove restriction, will be taking away from the Dutch a most profitable status.

IN the five years which have elapsed since restriction was instituted, the Dutch have profited immensely. Therefore, the club which the British have in hand is a powerful one—"If you don't come into some sort of a restriction scheme with us it will be a case of fight to the finish." Today the Dutch know (in millions of guilders) what they will lose by the elimination of British restriction. There was nothing concrete of this sort in 1921 and 1922. Nevertheless, the prospects for Anglo-Dutch co-operation are considered rather poor, largely on account of the big native holdings in the Dutch East Indies and the difficulty of organizing non-governmental restriction there.

In my opening paragraph I referred to a drop of 25 per cent in the price of raw rubber, and 15 per cent in share values. It is a remarkable thing, the tenacity and loyalty with which British rubber shares are held by a large section of the British people. Raw rubber seems to have stopped its downward movement at between 12d and 15d. It is felt that should restriction be removed entirely there might be a sudden drop down to 6d per pound for London raw rubber, but very soon thereafter the price would be stabilized nearer 12d than 6d, not only on account of the increased consumption induced by the lower prices, but also because of the substantially improved financial position of the British Companies compared with their reserves, etc., in pre-restriction days. Again, the companies are strengthened by the almost sentimental attachment shareholders have for rubber shares. They are held by a great many people as securely as gilt-edged paper.

British rubber shareholders in the last two weeks have had their high opinion of their holdings in raw rubber companies confirmed by the announcement that considerable American money has come into the market for the purpose of buying rubber shares. No one knows just how large these purchases are, but it is pretty safe to say they do not exceed, say, £1,000,000, which would not be more than one-half of 1 per cent of the total investment in British rubber. The figure is probably much less than that, if, for no other reason, that British rubber shares are held by such a wide range of small holders that it is difficult to buy up large blocks, even in times of depression such as obtained at the end of February.

THE possibility that Americans will pick up a substantial stake in the British rubber growing areas if rubber restriction should be abandoned is often mentioned. The fear that rubber growing supremacy may pass from the hands of the British has been expressed on various occasions. The proponents of restriction urge that if restriction were removed, the declining rubber prices would carry share prices down with them and then the invasion of American capital would begin. The plan of certain American financial interests along this line in 1921 and 1922 is recalled but the failure of those interests to carry through their plan is forgotten. The adoption of restriction is credited with having stopped their plan at that time, but I shall always question the practicability of any such movement of shares on a big scale for reasons which I have indicated above. But even if it materialized, the plantations would still be under the British flag and subject to British laws, such as the restriction legislation.

The Research Committee of the Cabinet has begun its investigation promptly, and is proceeding at a rate which has caused a protest to appear in the press that the Associations in the East had to cable a presentation of their case rather than send it by mail. One cry in London is for early action, and another is for a thorough investigation! A leading firm of rubber share brokers in their monthly survey of the position point out that surely the Cabinet will consider the rubber growing industry as a key industry in national economics on account of its importance in helping to pay the American debt, in bringing in substantial income taxes to the Treasury, etc.

I cannot close this letter without commenting on the courageous action of the British Government in making its announcement as regards the investigation of raw rubber. Undoubtedly, they knew they had to handle an ugly situation. The business of "unvesting" a vested interest is always unpleasant. Even the announcement of an investigation on this subject is bound to be unpleasant, regardless of the outcome.

Yours faithfully,

THE GENTLEMAN FROM MINCING LANE.

Rubber Industry of the United States in 1927

ALTHOUGH more crude rubber was used in the United States in 1927 than in 1926, the value of the products of the rubber manufacturing industry was somewhat less, according to the fourth quarterly report for the year which has just been released by the Rubber Association of America. This report, compiled from the Association's regular questionnaire, gives the first indication as to the course of the industry's business during the entire year.

The total wholesale value of rubber products produced and shipped during the year was $1,113,380,000 as compared with $1,206,022,000 in 1926. The industry remains in the billion-dollar class but by a smaller margin than before. The consumption of rubber during the year was 372,528 long tons as compared with 358,415 long tons in 1926. Since this increase in rubber consumption indicates a greater production of goods, the decrease in wholesale value can be directly attributed to the lower prices obtained for rubber goods during the year. The tire group shows a larger percentage loss than does the miscellaneous rubber goods group, indicating that lowered tire prices contributed chiefly to the decline.

In practically every case the total sales value of rubber products shipped from the factories during the last quarter were less than for the previous quarter. In only one quarterly period during the year, the first quarter, did the value of rubber goods shipments exceed the corresponding quarter of the previous year.

RUBBER ASSOCIATION FIGURES ON RUBBER INDUSTRY OPERATIONS IN 1927

WHOLESALE VALUE OF RUBBER PRODUCTS SHIPPED

	Tires and Tire Sundries	*Other Rubber Products*	*Grand Total*
1927—1st Quarter	$187,650,000	$73,845,000	$261,495,000
2nd "	211,948,000	74,024,000	285,972,000
3rd "	223,488,000	86,422,000	309,910,000
4th "	162,333,000	93,670,000	256,003,000
Total	$785,419,000	$327,961,000	$1,113,380.000
1926—1st Quarter	$180,833,000	$80,064,000	$260,897,000
2nd "	237,936,000	82,228,000	320,164,000
3rd "	269,317,000	84,705,000	354,022,000
4th "	178,709,000	92,230,000	270,939,000
Total	$866,795,000	$339,227,000	$1,206,022,000

CRUDE RUBBER CONSUMPTION*

(In Long Tons)

	Tires and Tire Sundries tons	*Other Rubber Products* tons	*Grand Total* tons
1927—1st Quarter	78,577	12,702	91,279
2nd "	82,648	12,335	94,983
3rd "	69,369	12,704	82,073
4th "	60,592	13,799	74,391
Total	291,186	51,540	342,726
1926—1st Quarter	73,081	13,676	86,757
2nd "	68,542	11,598	80,140
3rd "	75,142	11,148	86,290
4th "	64,891	11,664	76,555
Total	281,656	48,086	329,742

*Estimated to be 92% complete.

FOREIGN COMMERCE HANDBOOK 1928-1929. Published by the Foreign Commerce Department, Chamber of Commerce of the United States, Washington, D. C. 1928. 42 pp.

This handbook aims to furnish members of the Chamber of Commerce of the United States a list of the leading sources of export and import information. The more important general sources are described briefly. Other references are given under an alphabetical list of topical headings.

At the end of the handbook will be found a list of foreign trade policy matters which have occupied the attention of the Chamber. Some of these have been dealt with by referendum to the members of the Chamber or by resolution in annual meeting.

Aero-X—New Rubber Accelerator

THE American Cyanamid Company, New York City, have recently announced the development of a new low temperature accelerator called Aero-X, which is now being introduced to the rubber industry. Samples have been sent to many leading rubber chemists who are conducting tests with them.

Aero-X is a definite chemical compound which may easily be analyzed or tested for purity and uniformity. It is a pure white crystalline powder, melting at about 100 degrees C. When rubbed between the fingers it has a slightly soapy feeling and because of this characteristic it mixes well with rubber. Aero-X is absolutely non-poisonous.

The outstanding characteristics of Aero-X are given as follows: Effective cures at low temperatures, 20 to 30 pounds of steam, in a wide variety of compounds, from pure gum to all reclaim; low cost per unit of acceleration; it may be safely and easily handled in the factory.

Although Aero-X is primarily a low temperature accelerator, it may be used at temperatures up to 75 pounds of steam where speed of cure is the main consideration. It is compatible with all of the usual compounding ingredients, except stearic acid and other acid softeners.

Aero-X seems to be equally suitable for tread and carcass stocks, tubes, heels and soles, mechanicals, etc., and is said to be particularly free from scorching tendencies and from danger of overcuring. It is lower in cost than most other accelerators of equal strength and is said to be cheaper to use than other accelerators in its price class because of its accelerating strength and its use at low temperatures.

Aero-X is a stable compound and may, therefore, be kept in storage under ordinary conditions almost indefinitely without change in composition or in accelerating value.

10 YEARS AGO

Items Reprinted from March 25, 1918, issue of THE RUBBER AGE

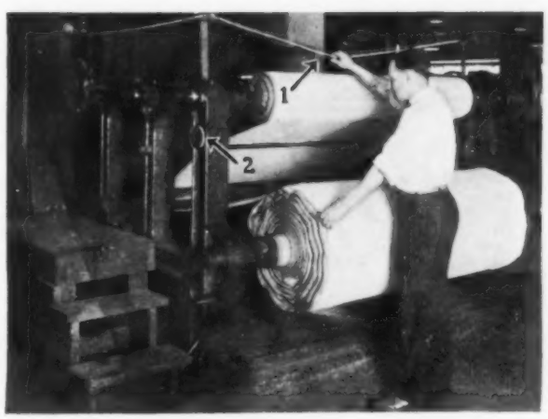
THE United States Rubber Company has purchased the plant of the American Locomotive Works, Providence, R. I. Samuel P. Colt, president of the company, states that the new plant will manufacture truck tires * * * "The Financial Prospects of Synthetic Rubber" was the subject of a paper read before the Philadelphia section of the A. C. S. by Dr. Frederick Dannerth * * * The board of directors of the Rubber Association of America approve the rules and regulations recently drawn governing arbitration in disputes within the industry. * * * The Rainbow Division Special Liberty Loan Committee of the Rubber Industry of Greater New York is organized to assist in floating the Third Liberty Loan. * * * The Ross-Lambert Rubber Company is incorporated in Ohio with a capital of $3,000,000. * * * Among those companies which are building new factories or enlarging their present plants to handle the increased war business are the Century Rubber Works, Chicago; Panther Rubber Company, Chelsea, Mass.; American Hard Rubber Company, College Point, Long Island; the Alling Rubber Company, Albany, N. Y.; Ohio Tread & Tire Company, Sandusky, O., and the Trubl-Pruf Tire Company, Peoria, Ill. * * * O. S. Tweedy, manager of the general branch sales of the United States Tire Company, has resigned to become vice-president and general manager of the L. A. Young Industries Company.

SAFETY KINKS *for the Rubber Factory*

No. 1 of a Series, Showing How Various Manufacturers Are Protecting Their Workmen Against Serious Accidents. Presented by Courtesy of the National Safety Council and with the Cooperation of the Rubber Section thereof.

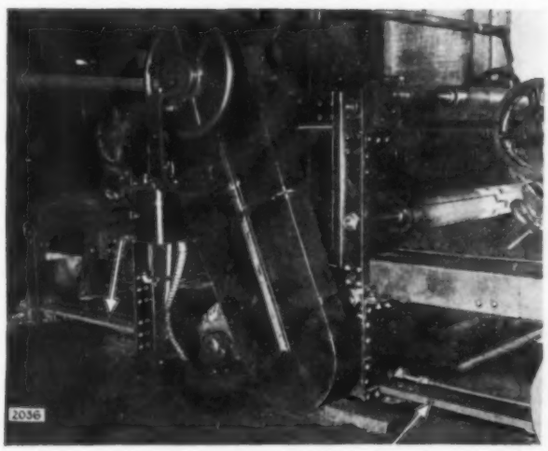
THESE trucks are used for transporting tires, cores, rings and other equipment necessary in tire manufacturing. This photograph, which was taken in the Detroit plant of the U. S. Rubber Company, shows how a simple change makes them safe to use.

When the lugs on the horizontal arms (indicated by the arrows) are in proper position, they keep the cores or other equipment from sliding off the truck as it moves through the plant. When they are reversed, the load can slide off or be easily removed. The truck on the left has short lugs. They are unsafe because they are apt to turn over as the truck jolts along, thus allowing the load to slide off and injuring the truckman or other workmen. Long lugs are seen on the truck on the right. Their length makes it impossible for them to turn over of themselves. Hence, they make the truck much safer for the workmen to use.



MANY workmen have suffered serious injuries through being caught in the windup machine used in connection with rotary and Spadone bias cutters, either on account of trying to thread the fabric while the rolls are moving, or trying to straighten a wrinkle or pick a ravelling while the windup is in motion.

On all windup machines in the Firestone factory there is now stretched a safety rope (1) at the end and at both sides. A pull on the rope will instantly stop the machine. This is much better than the button (2) which was previously installed because anyone caught can strike wildly at the rope and stop the machine, whereas it was necessary to hit the button squarely and sometimes the caught person was not within reach of it. This safety equipment does not eliminate the accidents, but it does reduce their severity to practically nothing.



THE United States Rubber Company protects the operators of the tandem calender windups in its Detroit plant by means of the safety trip treadles indicated by the arrows in this photograph. Similar treadles are located on the opposite side of the windup.

When the mill is running, operators are stationed along the side of the windup. In case one of them should get caught in the belting windup or the bite of the calender rolls, all moving parts of the calender can be instantly stopped by his stepping on one of these safety treadles.

Can you use these ideas to make your plant a safer place in which to work? See other "Kinks" in succeeding issues

FEEDS ITSELF!

A Royle tubing machine requires no stuffing rolls. The screw intake is automatic to capacity limit.

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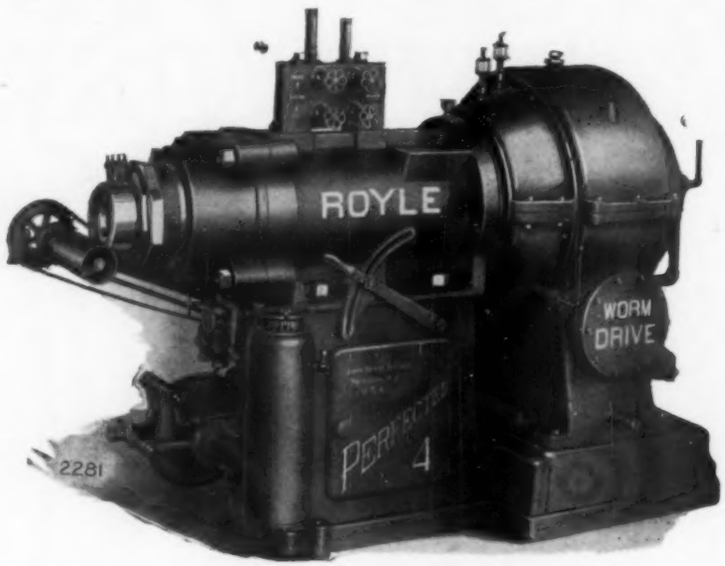

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EDITORIAL COMMENT

News From Amsterdam

THROUGHOUT the rubber industry in the United States there is naturally the greatest interest in the rubber restriction investigation with which the Civil Research Committee of the British Cabinet is engaged at the present moment. Dispatches from London indicate that the Committee is pushing the inquiry as rapidly as possible and Premier Baldwin has indicated that he expects to be able to make an announcement of the Committee's views before Parliament rises for the Easter holidays.

But American rubber circles will be as much interested in the news from Amsterdam as in the news of the Committee's report which will presently come out of London. The supply of rubber, and the price thereof, will be as much affected by the future of Dutch opinion as by anything the Civil Research Committee could recommend. The Dutch hold the balance of power. By standing aloof, they have rendered British restriction ineffective. While the British have struggled for five years to prove their policy, the Dutch have increased both the wealth and the power of their plantations.

The British have tried every known scheme to get the Dutch to come in with them on a restriction policy. There have been both honeyed and harsh words. The Dutch have replied with politeness but have shown at the same time that they are not called shrewd for nothing. Now we see another step in the campaign. It is practically a threat. The British will no longer carry the restriction load alone. Unless the Dutch are willing to cooperate in some sort of a scheme to limit rubber production, the British will let the Stevenson Scheme lapse, either at once or as early as practical. Then all will suffer together from the inevitable slump in the price of rubber.

It is of course impossible to say how the Dutch will view such a contingency. Never before has it been presented to them as bluntly as it is being presented today. In their final view of the matter the rubber consumer has the greatest interest. There seems good reason however for his being reassured. In the first place, the Dutch rubber growers are opposed to governmental rubber restriction. Likewise, the Dutch government frowns on such interference in private business.

In the second place, the chances for effective voluntary restriction in the Dutch East Indies are remote. Too large a part of the production is in the hands of the natives who know no economics beyond what the Chinese trader will pay for a pound of rubber. In any event, voluntary restriction has its faults. Every such voluntary effort has, as the British discovered in 1921 when voluntary restriction was being tried out before the British government agreed to intervene. Voluntary restriction is most effective when the price of the restricted commodity is unreasonably low anyway. When the price is fair or better, such restriction has a way of becoming ineffective of itself. In other words, it has the inherent flexibility so sadly lacking in the Stevenson scheme. The rubber consumer will be interested in the Dutch decision but has no real reason to fear it.

Up-Setting the Apple Cart

IT is rather an interesting commentary on the British rubber restriction policy and whatever confidence it might have inspired in the British rubber circles that the innocuous announcement made merely as a matter of course by the Prime Minister on February 8 should have precipitated a panic on the market which has now assumed such proportions as to have completely wiped out all the benefits of the fairly steady market which has prevailed for the last year.

As one of our British contemporaries puts it, the announcement of the Government followed by the panic of selling has effected a breach in the "restriction walls—a breach more disastrous and disconcerting than months of smuggling operations at the source of supply."

The whole performance of the London market and incidentally the London market was the first to break—certainly does not indicate that the whole Stevenson scheme was held in any real degree of confidence by the actual traders in the commodity. Nor is it easy to see why the break had not occurred long before. In fact, it may prove rather revealing if our British friends should make a careful study of just which factor has been most influential in maintaining satisfactory prices in the rubber market during the last two years—the Restriction policy or the American buying pool.

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PINE TAR ROSIN OIL

"DIAMOND" —MICA— "SILVER SHEEN"

WAREHOUSES
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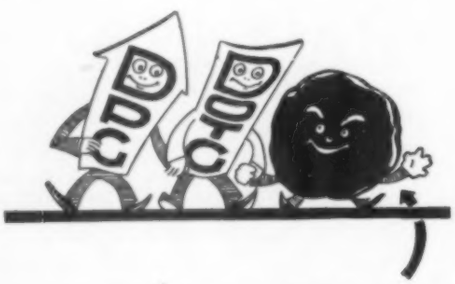

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NEWS of the INDUSTRY

Financial—Business
Building Operations
Personals
New Products

U. S. RUBBER EARNINGS AND SALES DECREASE

Net Surplus Earnings Only $1,024,992 Despite Heavy Drawing on Reserves and Plantation Profits and Surplus—Financial Position Still Strong.

THE annual report of the United States Rubber Company and its subsidiaries for the year ended December 31, 1927, shows a net income available for dividends, after deducting all other charges, of $10,232,052. After preferred dividends, amounting to $5,226,489, and depreciation of plants, amounting to $3,980,571, are deducted, the surplus is $1,024,992. The surplus in 1926 on a comparable basis was $8,535,380. Furthermore, the 1927 surplus was achieved only by taking into the income account a contingent reserve fund of $8,535,380 set aside at the end of 1926 as well as $8,910,679 from surplus previously accumulated. The income account also contains $4,000,000 drawn from the 1927 profits of the company's plantations.

Sales of the United States Rubber Company in 1927 showed a decline of $22,085,364 which brought the total down to $193,442,945. The decline from 1926 amounted to 10.25 per cent, said to be chiefly due to an average reduction in finished goods prices of 13½ per cent. In other words, declining prices more than accounted for the drop in the sales volume.

Unit Sales Increase

There was a substantial increase in unit sales in all departments of the company's business other than tires and that increase was sufficient practically to offset the reduction in selling prices of these commodities. The sales decrease during the year was chiefly due to reductions in the prices of tires and to the reductions in unit sales of tires to automobile manufacturers.

With regard to the heavy drawing on the surplus and reserve accounts, C. B. Seger, president of the company, pointed out in his annual report that inventories as of December 31, 1926, had not been written down on account of the uncertainty of crude rubber prices. In the early part of 1927, however, it appeared that rubber prices had somewhat stabilized and the inventories carried over from 1926 were therefore adjusted, the amounts required for such adjustment being mentioned above. In connection with the adjustment, $8,000,000 from the surplus account of the United States Rubber Plantations, Inc., was transferred to the parent company. This left the plantation subsidiary with only $844,941 in surplus. The total drawn from the plantations company by the parent company in the last two years has amounted to $18,000,000. The profits of the plantations in 1927 were estimated at $4,000,000, that amount having been taken into the income account of the parent company.

Total current assets of the United States Rubber Company at the end of 1927 amounted to $134,639,199 and current liabilities to $34,451,562, or a ratio of about 4 to 1. Inventories of raw materials, including crude rubber, were taken into account at the end of the year at or below current market prices. The company retired $2,875,400 of funded indebtedness during the year, consisting principally of 6½ per cent gold notes paid in March, 1927. The company had a contingent liability at the end of 1927 of $2,000,000 as endorser of a note of the Beacon Falls Rubber Shoe Company.

INCOME ACCOUNT
United States Rubber Company
Year Ended Dec. 31, 1927

Income from operations		$12,522,952
Net earnings of plantations		4,000,000
Total net income		$16,522,952
Interest	$6,290,900	
Preferred dividends	5,226,489	
Depreciation	3,980,571	
Total Charges		15,497,960
Net Surplus		$1,024,992

CONSOLIDATED BALANCE SHEET
December 31, 1927

Assets		
Cash		$7,535,051.87
Accounts & Notes Receivable:		
From Customers		47,156,206.25
From Others		2,755,901.01
Inventories:		
Finished Goods		37,065,080.35
Materials and Supplies		34,237,556.61
Crude Rubber in Transit		5,889,370.35
Total Current Assets		$134,639,166.44
Plants, Properties and Investments, including Rubber Plantations, less Reserve for Depreciation		183,739,231.48
Open account with U. S. Rubber Plantations, Inc.		4,571,830.41
Securities		5,924,506.86
Common Stock and notes, variously held		6,253,381.04
Prepaid and Deferred Assets		4,867,816.19
Total Assets		$339,995,932.42
Liabilities		
Bank Loans		$11,750,000.00
Accounts Payable		18,204,201.65
Drafts and Acceptances for crude rubber in transit to New York		4,497,360.38
Total Current Liabilities		$34,451,562.03
Funded Indebtedness		107,352,400.00
Reserves for Insurance		4,999,370.04
Capital Stock, Preferred	$65,110,000	
Capital Stock, Common	81,000,000	
Minority, Dominion Rubber Co., Ltd., Stock	258,400	
Total Capital Stock		146,368,400.00
Fixed Surpluses—Subsidiary Companies		6,677,813.63
Surplus		40,146,386.72
Total Liabilities, Reserves and Capital		$339,995,932.42

CONSUMPTION OF CRUDE RUBBER CONTINUES HIGH

Industry Absorbs Practically Same Tonnage as in January—Stocks on Hand and Afloat Go to New High Record—Reclaimed Used is 48.6%.

THE consumption of crude rubber in the United States during February totaled 33,702 tons, which, taking in consideration that February is a short production month, was at about the same rate of consumption as during January when the rubber industry used 34, 403 tons. It showed an increase, however, over the total of 30,137 tons consumed in February, 1927. Thus far this year the total consumption, amounting to 68,105 tons, is well ahead of the consumption during the corresponding two months of 1927 which totaled 61,655 tons.

Importations fell off to 29,445 tons during February as compared with 46,242 tons in January, but showed a slight increase over imports during February a year ago. In spite of this drop in arrivals, stocks on hand as of February 29 still remain at the high figure of 108,955 tons as compared to 110,244 on January 31. The tonnage of crude rubber afloat to the United States at the end of February amounted to 43,317 tons. Thus, the total stocks of rubber on hand and afloat as of February 29 represent a new high record, totaling 152,272 tons. The same figure on January 31, 1928, was 151,500 tons and on February 28, 1927, 133,352 tons.

Consumption of Reclaimed High

Consumption of reclaimed rubber during February is estimated at 15,400 tons, representing 48.6 per cent of the total crude rubber used. This is slightly less than the consumption of reclaimed in January but the percentage of crude is still high. The large tonnage of both crude and reclaimed consumed during the month indicates a continuation of the high production schedules in the rubber goods manufacturing industry which has prevailed since the first of the year.

The various grades of crude rubber imported during February as compared with the arrivals during the same month of 1927 and January of the current year, as reported by the Rubber Association of America, are shown in the table below. Official figures will be issued by the Department of Commerce later in the month.

	Feb., 1927	Feb., 1928	Jan., 1928
Plantations	25,326	27,852	43,668
Paras	1,668	756	1,580
Africans	213	125	433
Centrals	151	125	126
Guayule	52	587	435
Manicoba and Matto Grosso	....	....	1
	27,410	29,445	46,242

TRENTON RUBBER PLANTS WORKING ON FULL TIME

Conditions in the rubber manufacturing industry around Trenton are reported to be very satisfactory. The majority of plants report business at least up to normal. Certain lines of mechanical rubber goods are in big demand.

The Murray Rubber Company is said to be shipping thousands of feet of fire hose to its western branches. Both the Murray Rubber Company and the Combination Rubber Company report a good production of tires and tubes.

The Puritan Rubber Company recently put on a night shift in order to catch up with orders already in hand. The company has completed a factory addition and this will be used exclusively for the manufacture of rubber tiling.

The plant of the Fisk Flap Tube Company at Yardville, N. J., has remained close since the death of C. Francis Fisk, late in December. Mr. Fisk held the patent on the flap tube and it is not known whether the local plant or some other concern will continue to manufacture it.

FOOTWEAR FACTORIES AGAIN ON FULL TIME

After a shut-down from March 16 to April 2, most of the United States Rubber Company footwear factories in New England will resume on a full five-and-a-half day week. The renewal of activities on the part of other factories in the district indicates that the lull in footwear manufacture, due to the open winter, is past.

Converse Rubber Shoe Company, Malden, Mass., which has been on a four-day schedule, went on a five-day basis on tennis shoes on March 16 and expects to go on full time in all departments by April 1. Hood Rubber Company is running full time on a balanced production and Cambridge Rubber Company, which was obliged to shut down early in February due to an accident in the vulcanizer room, is picking up production.

SCRAP RUBBER DEALERS ATTEND ANNUAL MEETING

The fifteenth annual conference of the National Association of Waste Material Dealers, Inc., was held March 20 and 21 at the Hotel Astor, New York City. The members of the Scrap Rubber Division met on March 20 at the hotel headquarters of the Association at 10:30 A. M., and a report was made by the committee recently appointed to meet in conference with a committee from the Rubber Reclaimers' Division of the Rubber Association of America with reference to changes in scrap rubber specifications. David Feinburg, the chairman of the Division, presided.

Goodyear Builds "Puritan"

The Goodyear Tire & Rubber Company is building a sister airship to the blimp "Pilgrim" which will be christened "Puritan." The new ship will be slightly larger than the "Pilgrim" and will be used for training Goodyear pilots and for general experimental purposes. It will be equipped with two motors placed on outriggers. The ship will have a cruising speed of 46 miles per hour but will be capable of making 55 miles an hour at top speed. It will be 128 feet long and 37 feet in diameter as compared with the "Pilgrim" which is 110 feet in length and 30 feet in diameter.

BOOTLEGGING TIRES IS LATEST FRAUD SCHEME

Automobile tire bootlegging is the latest menace to the legitimate tire dealer and in one or two of the larger cities has developed into a fraud of considerable size. The matter was given exposure recently in New York when a number of peddlers were discovered to be operating in the Bronx section. The new type of "bootlegger" usually peddles his wares from a closed truck and reaps his harvest from gullible car owners who are sadly in need of new tires.

The fakers sell what they claim to be new automobile tires of standard makes, which are wrapped in the manner common to the trade and stamped with what would be taken as correct brand names. The "new" tires are in reality badly used ones, but doctored and painted to resemble new tires. All sales are made for cash and in great haste, the "bootlegger" telling his victims that he has no peddler's license and, therefore, must watch out for the police.

A. C. S. Has Social at Akron

The Akron section of the American Chemical Society held its first social affair of the season at the Firestone Clubhouse on the evening of March 10. After a steak dinner the guests were entertained by a chalk talk by the cartoonist of the Akron *Times Press*. An evening of dancing and bridge followed. About 80 couples were present.

Rex Plant Has Receiver

A receiver has been appointed for the Rex Tire & Rubber Company, Medina, O., as a result of suit brought by the Akron Standard Mold Company. The company has been known as the Wadsworth Rubber Company, Excel Rubber Company and Grubb Rubber Company. The name Rex Tire & Rubber Company was adopted several weeks ago when new interests attempted to refinance the concern. The factory has been closed since the death of D. A. Grubb last October. The new move in appointing a receivership is intended to help clear the way for the refinancing of the concern.

Western Rubber Elects

At a recent meeting of the stockholders of the Western Rubber Company, Goshen, Ind., the following board of directors were elected: B. F. Deahl, Ray Deahl, Milton Latta, Ina K. Slate and George B. Slate. The officers named are George B. Slate, president and general manager; B. F. Deahl, vice-president; Milton Latta, secretary-treasurer and sales manager.

TIRE FABRIC PLANTS INCREASE OPERATIONS

Manufacturing operations in the tire fabric mills at New Bedford, Mass., are reported to have increased considerably during the last fortnight. The three largest mills in the district are subsidiaries of the Fisk, Goodyear and Firestone companies. All are being operated on a multiple shift basis and expect to be in full capacity operation within a short time. Indications are that full schedules will be continued at least until early fall.

The Firestone Cotton Mills, which was formerly Manomet Mill No. 4 has never previously been operated at full capacity. It was purchased by the Firestone interests a few months ago for a sum shown by the annual report of the Manomet concern at about $1,250,000. The original cost of the plant with equipment was greatly in excess of that amount.

Operations under the Firestone management were begun in January, at about the same time that production at the Fisk and Devon (Goodyear) plants was resumed after having suspended work in October. At that time it was thought that the tire fabric operations of Fisk and Goodyear would be moved south in order to effect economies in production, but it was later decided to attempt a material reduction in costs by a rearrangement of machinery and work at New Bedford. While no statements have been forthcoming from the companies it is now believed that costs have thereby been greatly reduced so that there is little likelihood of any change to the South for the present year, at least.

RUBBER MEN ATTEND PRODUCTION RALLY

More than 400 production managers, superintendents and foremen attended the spring production rally of the Associated Industries of Massachusetts held at the Boston City Club on March 6. The Hood Rubber Company and the Converse Rubber Shoe Company were represented by large delegations at the meeting. Colonel Charles R. Gow, director of the Hood Rubber Company, was one of the principal speakers, taking for his topic "Economic Fallacies."

R. & H. Holds Meeting

At the stockholders' and directors' meetings of the Roessler & Hasslacher Chemical Company, New York City, on March 6, W. A. Hamann relinquished the presidency of the company to become chairman of the board of directors. He was succeeded by Dr. H. R. Carveth, formerly first vice-president. P. Schleussner, formerly second vice-president, became first vice-president. Other members of the board and officials of the company were re-elected.

Opens Boston Branch

C. P. Hall Company, manufacturers and distributors of rubber chemicals, Akron, O., have opened an office at 24 Milk Street, Boston, Mass., in order to more effectively serve the New England territory.

ASS'N PROTESTS FREIGHT RATES ON CARBON BLACK

As a protest against sixty per cent increases in the freight rates on carloads of carbon black as now proposed by the railroads, the Rubber Association of America has filed with the Interstate Commerce Commission a brief in which the importance of the material to the rubber industry is explained.

Akron is the largest consuming point for carbon black, and Louisiana and Texas are the principal producing states, the brief points out. The present rate from Monroe, La., to Akron is now 91½ cents and the railroads propose to increase this rate to $1.40. The $1.01½ rate from Breckenridge, Texas, would be increased to $1.70. The brief estimates the production of carbon black in the United States to amount to 180,000,000 pounds.

The Interstate Commerce Commission has taken the Association's protest under advisement and is expected to consider the brief in connection with the general readjustment of railroad freight rates in the Southwest which is being sought by the railroads.

GRASSELLI FILES BRIEF IN ACCELERATOR SUIT

The Grasselli Chemical Company, through its attorneys, Mayer, Warfield and Watson, of New York City, has filed a 150-page brief in the appeal of its suit against the National Aniline Chemical Company, New York City, for infringement of the Hoffmann and Gottlob accelerator patent (U. S. patent No. 1,149,580). The brief reviews, at length, the grounds upon which Judge Hand of the U. S. District Court for the Southern District of New York held the claims in the patent invalid for lack of invention, and arguments against such a ruling are offered. A decision of the Circuit Court will probably not be announced for some weeks or months.

The suit was begun in February, 1926, and Judge Hand's decision was handed down the next January. In substance his decision meant that the manufacture and use of diphenylguanidine and triphenylguanidine accelerators, in which the defendant, the National Aniline Chemical Company, had been active, did not infringe the patent in suit. Grasselli immediately announced intention to appeal and the brief recently filed is another step in the litigation which has attracted the attention of the entire rubber industry. Many well-known rubber technologists gave testimony during the hearings in the district court and such evidence is critically reviewed in the brief for the plaintiff-appellant.

New Metal Plating Company

The Chromilite Corporation, Indianapolis, Ind., which was recently formed by J. C. Patten, president of the Metal Protection Company of the same city, have leased 15,000 feet of floor space at 403 West Michigan Street, Indianapolis, where they will establish a new metal-plating works primarily for the application of chromium under a special process. Mr. Patten will head the new company as president and B. R. Haueisen is secretary and treasurer. The present plant of the Metal Protection Company will also be removed to the new location. Chromium plating is well known in connection with tire and other rubber good molds.

DR. J. TEPPEMA JOINS STAFF OF C. P. HALL CO.

C. P. Hall Company, Akron, O., have announced that they have secured the services of Dr. J. Teppema, formerly research chemist with the Goodyear Tire & Rubber Company. In his new connection with the Hall Company Dr. Teppema will handle

DR. J. TEPPEMA

technical sales and various research work. While with the Goodyear organization his chief work was in the line of accelerators and rubber compounds.

Dr. Teppema was educated in Holland and took his B.S. degree in chemistry at the University of Amsterdam in 1919, and his M.S. degree from the University of Leiden, where he also completed work for his PhD., in 1922. The following year he came to the United States and engaged in research work at the Massachusetts Institute of Technology. In 1924 he joined the Goodyear organization, where he has remained until his recent change to the Hall company Dr. Teppema is known for a number of chemical papers on rubber technology.

New Rubber Co. Formed

The Surety Rubber Company, Carrollton, O., has recently been incorporated under the laws of Ohio, to operate as a manufacturer of rubber goods. The company was organized some time ago to take over the business of the Miller Hall Rubber Company which has been operating for several months in space leased from the Tuscan Tire and Rubber Company.

The company manufactures high voltage steam cured electrician gloves, acid proof industrial gloves and steam cured high grade household gloves. It is reported that the company has sufficient orders booked ahead to carry the plant in full operation for several months.

Part of the capital stock of the new corporation will be offered for sale in order to furnish additional working capital and further expansion.

FIRESTONE SELECTS SITE FOR FACTORY IN ENGLAND

The Firestone Tire & Rubber Company announced some time ago that it was planning the building of a factory in Great Britain for its British subsidiary, the Firestone Tyre & Rubber Company, Ltd. At the time the announcement was made the actual site for the new plant had not been determined. It is now understood that the company has secured a site on the Great West Road, near Brentford, Middlesex. Work is expected to start on the erection of the factory building immediately.

BRITISH CHEMISTS TO VISIT AKRON ON TRIP

Members of the British Society of Chemical Industry, the Institution of Chemical Engineers and the Chemical Engineering Group are planning a visit to the United States and Canada during August and September of this year. The American Section of the Society of Chemical Industry and the American Institute of Chemical Engineers will be their hosts during their sojourn in the United States. Their itinerary will include a stop at Akron, where a trip of inspection will be made through some of the leading rubber manufacturing plants.

Opens Boston Office

Horace B. Odell has been appointed New England representative for Vansul, Inc., New York, distributors of rubber chemicals and pigments, with offices in the Park Square Building, Boston, Mass. Mr. Odell has been associated for a number of years with his uncle, James E. Odell, Boston crude rubber and pigment dealer, and is well known among the New England rubber factories. T. G. Sullivan, president of Vansul, Inc., is at present at the Boston office, where he will remain for the next month.

The Stetson Rubber Company has been organized at East Butler, Pa., and will specialize in retreading tires, according to H. B. Callahan, general manager of the Corona Cord Tire Company. It is understood that the owners of the Corona Cord Tire Company, which is also located in East Butler, are interested in the new concern.

Henry Clay Corson

Henry Clay Corson, of Scarsdale, N. Y., formerly executive vice-president of B. F. Goodrich Company, Akron, O., died on March 4, at his Scarsdale home.

Mr. Corson was at one time a prominent figure in the industrial life of Akron. He joined the Goodrich organization as a stenographer to Dr. Goodrich shortly after the company was organized, and during the expansion of the company he rose to one of the highest administrative positions in the concern. After his retirement 20 years ago, he spent most of his time in travel. Surviving him are his widow and a nephew, George F. Wilson, an experimental engineer of the Goodrich company.

Timely Financial News

REFINANCING RUMORED OF KELLY-SPRINGFIELD

Present Financial Set-Up is Proving Cumbersome—Plans Contingent on Increase in Earnings Over Current Year—Overcame Large Loss in 1926.

RUMORS continue to persist that the Kelly-Springfield Tire Company will attempt to work out a recapitalization plan for submission to the stockholders later in the year. The plan is believed to be contingent, however, on the ability of the company to greatly increase its earning power during the current year. Last year's profit of $357,741 showed a substantial recovery from the previous year, when the company showed a net loss of $3,439,799.

While the Kelly-Springfield company does not publish yearly sales figures it is reported that it attained a considerably higher unit and dollar sales volume in 1927 than in 1926. The two outstanding accomplishments of the past year, as far as the financial structure of the company is concerned, were the retirement of $1,000,000 of 8 per cent gold notes and the liquidation of $1,335,988 in bank loans.

The reduction in working capital from $5,604,957 as of December 31, 1926, to $4,730,800 as of December 31, 1927, was attributed to a reduction in inventory valuation. Surplus, which was carried at $777,189 at the end of 1926 was also reduced to a much lower figure of $140,484 on December 31, 1927. This was occasioned by a write-off of $759,252 described as "reduction of December 31, 1926, inventory of finished goods and work in process of replacement value subsequently determined."

According to an analysis recently made by Dow, Jones & Company, the present capital set-up of the Kelly-Springfield Company is "so cumbersome that it is logical to assume that, if and when a recapitalization plan is adopted, it will undertake the retirement of a considerable portion of the senior issues." Capitalization at present consists of $5,000,000 of 8 per cent gold notes, $2,950,000 of 6 per cent cumulative first preferred stock, $5,264,700 of 8 per cent cumulative second preferred stock and 363,840 shares of $25 par common.

Accumulations on the first preferred stock will total 24 per cent on April 1, while accumulations on the second preferred amounted to 32 per cent on February 15. The total amount due in back dividends on both issues exceeds $2,000,000. In addition, the company owes more than $7,000,000 in bank loans.

CATALPO!

The annual meeting of the Kelly-Springfield Tire Company stockholders was postponed from March 13 to March 27, due to lack of quorum.

The balance sheet of the company, as shown from its annual report, was published in THE RUBBER AGE of March 10, 1928.

RUBBER COMPANY STOCKS REMAIN FAIRLY STEADY

Stocks issues of the various rubber manufacturing companies remained fairly steady on the stock exchanges of both New York and Cleveland during the past fortnight. There was a short period of bearish trend, actuated more or less by the declining crude rubber market, but the general bullish attitude on the exchanges in connection with other industrial issues and the stimulation which the markets got from the drive in General Motors, Radio Corporation and others, have kept the whole list of issues in a bullish atmosphere. Within the last few days, the increased activities of the rubber "pool" has also contributed to boost rubber shares and in some instances to bring an upward trend to certain individual shares with the result that on March 19 the rubber issues gained from 1 to 3½ points overnight.

Firestone common developed a weakness for no apparent reason early in the last fortnight and went as low as 170 but has recovered to 185. General common also slumped to 165 for a new record low for the year. The annual report of United States Rubber, while showing a profit, was not considered as especially favorable and as a consequence the common stock went to 40 but has since recovered to 46¼. U. S. Rubber preferred also touched a new low level at 82½, but returned to 91½.

Late Stock Prices

	Last Price		—1928—	
	Mar. 19	Mar. 6	High	Low
Ajax	10¾	10⅛	14⅜	9¾
Firestone	185	182	232	170
do. 6% pfd.	110	109¼	111	109
do. 7% pfd.	108½	108⅝	111½	108
Fisk	15⅝	14⅜	17¾	14¾
do. 1st pfd.	93½	84	98	84
General	165	180	190	165
do. pfd.	102	102	111	100
Goodrich	84½	81⅝	99⅜	80
do. pfd.	110	109¼	112	109¼
Goodyear Com.	56½	60¼	72½	57½
do. pr. pfd.	96½	97⅝	99½	96
do. pfd.	—	—	120	100
Hood	36	40½	43	42
India	20	18	23½	16
Intercontinental	16½	15½	21⅜	4⅜
Kelly Springfield	21½	22⅝	27⅝	15
do. 1st pfd.	74¾	75	78	75
do. 8% pfd.	70	78	84	55¼
Lee	19	18½	22⅝	17¼
Miller	23	28	27½	21
do. pfd.	92	90	97½	90
Mohawk	35	30	40	20
do. pfd.	75	76	80	55
Seiberling	36	35	42½	35
do. pfd.	103½	103½	105	102
Star	1	1	2½	1
U. S. Rubber	46¼	45¾	63¼	40
do. pfd.	91½	93½	109⅝	82½
U. S. Rubber Reclaiming Com.	—		16½	14½

INTERCONTINENTAL SHOWS DECREASE IN PROFITS

The report of the Intercontinental Rubber Company and subsidiary companies for the year ended December 31, 1927, showed net profits of $659,066 after expenses, depreciation and Federal taxes, equal to $1.11 per share earned on 596,004 shares of no par common stock outstanding. The net profit for the previous year was $764,122 or $1.28 per share.

Consolidated Income Account
INTERCONTINENTAL RUBBER COMPANY

	1927	1926
Operating profit	$923,327	$1,109,906
Other income	102,752	79,949
Total income	$1,026,079	$1,189,855
Expenses, etc.	126,371	183,177
Interest	.....	9,072
Depreciation	134,642	119,991
Federal taxes	106,000	113,493
Net profit	$659,066	$764,122

MOHAWK STOCKHOLDERS VOTE NEW STOCK ISSUE

At a special meeting of the stockholders of the Mohawk Rubber Company held on March 5, at the company offices in Akron, S. S. Miller was re-elected president and general manager and J. B. Huber was re-elected vice-president. R. E. Bloch, treasurer, was elected to the office of vice-president in charge of finance and J. F. Jones, general sales manager, was elected to the office of vice-president in charge of sales. H. H. McCloskey and H. H. Matz were re-elected to the offices of secretary and assistant treasurer respectively.

The articles of incorporation were amended to increase the number of shares of no par common stock from 25,000 to 35,000. It was voted to increase working capital by issuing $800,000 in gold debenture bonds.

Of the additional shares of common stock authorized, 5,000 shares were purchased by present Mohawk stockholders. The proceeds will be used to retire immediately the 8 per cent gold notes which were issued for temporary financing early in 1927.

Raises Quarterly Dividend

The Firestone Tire & Rubber Company has declared a quarterly dividend of $2.00 a share on the common stock which raises the common from the basis of $6.00 to $8.00 per year. The regular quarterly dividends of $1.50 on the 6 per cent preferred and $1.75 on the 7 per cent issue were also declared.

The India Tire & Rubber Company, Akron, O., through its secretary and treasurer, P. C. Searles, has declared a dividend of one and three quarters per cent on its preferred stock. The dividend will be payable April 2 to stockholders of record March 20.

Names in the News

L. C. ROCKILL, sales manager of the Miller Rubber Company and former sales executive of the Goodyear organization, has been elected to the board of directors of the Miller company.

W. L. SCHURZ, formerly U. S. Commercial Attache at Rio de Janeiro and head of the government party of the Department of Commerce which made the rubber survey in the Amazon valley, is now export manager for Johnson & Johnson, New Brunswick, N. J.

E. L. (RED) PARKHURST, famous motorcycle speed demon, has joined the sales force of the Gates Rubber Company, of Denver, Colo., and is now selling their "Vulco" products in the St. Louis district.

ARTHUR F. TOWNSEND, president of the Manhattan Rubber Manufacturing Company, Passaic, N. J., was given a surprise reception by the directors, office associates, foremen of the plant and friends on the occasion of the 25th anniversary of his presidency, on March 2. He has been with his company since it began operations on January 1, 1893.

J. R. PHILBROOK has been appointed manager of the Boston branch of the Ajax Rubber Company. Mr. Philbrook has been identified with the tire trade for the past fifteen years and during that time has also served with the United States Tire Company and the Kelly-Springfield Tire Company.

GYRUS S. CHING, president, American Management Association, and supervisor of industrial relations of the United States Rubber Company, was the speaker at the March meeting of the New England Purchasing Agents' Association held at the University Club, Boston, on March 12. Mr. Ching also recently spoke before the Foremen's Club of the automobile industry at Bayonne, N. J.

CHARLES O'HEARN, for the past year manager of the Firestone footwear factory at Hudson, Mass., has been assigned to the Firestone Cotton Mills, at New Bedford, Mass. Mr. O'Hearn, who graduated from Yale in 1924 and began his career in the rubber industry immediately thereafter, has met with marked success in the Firestone organization.

C. L. BOLLINGER has been named as manager of the local advertising and sales promotion department of the Mason Tire and Rubber Company, at Kent, O. He was a former Mason employee and returns to his old company after three years' absence during which he was in a jobbing business of his own.

JAMES FAIRBAIRN, prominent in British rubber circles, has joined the board of directors of Rubber Roadways, Ltd., in the place of A. S. Morrison, retired.

E. C. JOST, formerly manager of the Firestone Clubhouse at Akron, has purchased the business of the Banner Tire Company, 322 S. High Street, Akron, and will continue it as a service station and tire store. It is needless to say he will carry Firestone tires.

CARL BLY recently resigned his position as manager of the sales promotion department of the Mason Tire & Rubber Company, Kent, O., to go with B. F. Goodrich Company, Akron, as truck tire sales analysist. Mr. Bly has been with the Mason company since 1924, in charge of sales promotion and sales statistics. Since June, 1927, he has also been advertising manager. Prior to his connection with Mason, he was advertising manager of the Republic Rubber Company, Youngstown.

Carl Bly

EX-MAYOR CURLEY, of Boston, and MAYOR QUINN, of Cambridge, Mass., were the speakers at the banquet of the Boston Tire Dealers' Association, held at the Boston Chamber of Commerce on March 15, with about 450 in attendance. Ninety-five per cent of the tire dealers in greater Boston are members.

E. D. MANLEY, formerly the Boston district manager of the Firestone Tire & Rubber Company, has become associated with the Miller Rubber Company in an executive position. Mr. Manley has been identified with the tire business for many years.

D. H. KILLEFFER, who has been for several years an associate editor of *Industrial and Engineering Chemistry* and a prominent figure in the American Chemical Society, is leaving his editorial post to become technical director of the Dry Ice Corporation and will establish a laboratory at 216 East 45th street, New York City.

I. ELY REED, treasurer of the Mercer Rubber Company, Hamilton Square, N. J., has been spending several weeks in Florida and Cuba on a combined pleasure and business trip.

W. N. NOBLE, who has been an executive of the Firestone Tire & Rubber Company for the past eleven years, has resigned to engage in private business. He expects to make an announcement of his future plans in the near future.

FRANK C. VAN CLEEF, formerly secretary of the B. F. Goodrich Company, is now with the Guaranty Company, New York City, which is the underwriting and securities marketing subsidiary of the Guaranty Trust Company.

L. M. VAN RIPER, formerly general sales manager of the Ajax Rubber Company, has joined the Conde Nast organization, which in addition to its publishing interests, also conducts a commercial printing service.

LEON THEREMIN, the Russian scientist and inventor, was the guest of the B. F. Goodrich Company on March 7.

MILTON H. MARTINDELL, secretary of the Joseph Stokes Rubber Company, Trenton, N. J., has been elected a director of the Capital City Trust Company.

O. W. ERDMAN, son of one of the officials of the Continental Rubber Company, Hanover, Germany, who has been studying in the factory and office of the B. F. Goodrich Company, Akron, for the past two years, sailed for Germany late in March. It is understood that he will take charge of a portion of the sales and advertising work in the Continental Rubber Company organization upon his return to Germany.

W. O. RUTHERFORD, former vice-president and director of the B. F. Goodrich Company, sailed recently on an extended tour of the West Indies for a much-needed rest. He plans visiting several Pan-American countries and is not expected back in Akron until the middle of April.

F. K. ESPENHAIN, vice-president of the Goodyear Tire & Rubber Company, Akron, O., was in Salt Lake City, Utah, recently for a conference in that city of the representatives of the Goodyear company in Utah and Montana.

Memorial to B. G. Work

A special room will be equipped at the Children's Hospital, Akron, as a memorial to the late B. G. Work, former president of B. F. Goodrich Company. Funds have been provided for the purpose through a gift made to the hospital by his son.

Mr. Work's associates feel that a memorial in this form is particularly fitting in view of the fact that the Children's Hospital was founded largely through the efforts of Mr. Work's predecessor at Goodrich, George T. Perkins, and Mr. Work, during his lifetime, was actively interested in the institution.

Rubber News Around the World

RUBBER AT THE BRITISH INDUSTRIES EXPOSITION

Rubber Growers' Association Shows Exhibit of New Rubber Goods at Birmingham Section of Industries Fair—40 Manufacturers Cooperate.

THE Rubber Growers' Association of London has selected the Birmingham section of the British Industries Fair for a comprehensive exhibit of the various industrial applications of rubber. Over forty British manufacturers will cooperate in offering samples of their products. A large blue pagoda will be the central feature of the exhibit and will be surrounded with examples of rubber flooring and the various exhibits.

Besides the usual display of rubber products common to commercial trade, other interesting items on exhibit will include rubber stippling brushes, new types of solid rubber wheels, rulers fitted with ball-bearing ends and rubber-covered rollers which are non-slipping and non-inking. New rubber drive belts for motorcycles, consisting of rubber blocks which are in compression in practically every radical direction, will be featured as well as a new flexible coupling, for drives, dynamos and pumps, consisting of two steel flanges keyed or otherwise secured to the receptive shafts and the connecting rubber buffers which are fitted radically into the two flanges, giving a silent and flexible drive. A drain pipe jointing band made of rubber is another newly patented device which is distinctly new. Further examples of the new suspension system in motor cars will be shown which consist of discs of rubber fitted between two serrated metal presses, one of which is secured to the chasis frame while the other is secured to the end of the radius arm, the free end of which is attached to the axle. A section of the exhibit is also allotted to the Rubber Research Association which will arrange an interesting technical exhibit.

NEW RUBBER ROADWAY LAID DOWN IN LONDON

A thirty-yard stretch of rubber roadway, off Exhibition Road, London, has been laid down for the purpose of a practical test. A new kind of rubber paving block invented by T. S. Cowper, of England, has been used.

The blocks, which are laid on an interlocking principle, are provided with a non-skid surface which grows rougher with wear, and are made with a hard core to take weight-strain. The new surface is said to reduce vibration and shock to vehicles and surrounding buildings.

Members of the council of the London borough of Kensington, in which the experimental stretch of road is located, paid an official visit to the rubber roadway and were considerably impressed with its appearance.

CATALPO!

CANADIAN RUBBER ASS'N ELECTS NEW OFFICIALS

At the annual meeting of the Rubber Association of Canada, held at Montreal in February, E. W. BeSaw, who is in charge of the Hamilton, Ont., plant of the Firestone Tire & Rubber Company of Canada, Ltd., was elected president succeeding John Westren of the Dunlop Tire & Rubber Goods Co., Ltd. The other new officers of the Association include C. H. Carlisle, vice-president, who is president of the Goodyear Tire & Rubber Company of Canada, and C. A. Jones, the new assistant treasurer, who is the manager of the Seiberling Rubber Company of Canada. C. N. Candee, of Gutta Percha & Rubber, Ltd., Toronto, who is treasurer of the Association, and A. B. Hannay, manager and secretary, were re-elected.

E. W. BeSAW
Newly Elected President of the Rubber Association of Canada

Canadian Tire Exports

The Canadian exports of automobile casings for the month of January, 1928, totaled 132,338 as compared with 120,615 shipped during December, 1927, according to reports of the Department of Commerce. The average declared value per auto casing exported in January was $10.02 as compared to $10.31 in December and $9.82 in November, 1927.

TASMANIAN RUBBER CO.'S CHEMIST VISITS AKRON

R. S. Taylor, chief chemist of the Rapson Tire & Rubber Company (Tasmania) Ltd., has been on an extensive trip through the United States during the last month and has spent considerable time in Akron and Cleveland, visiting the rubber manufacturing industry and particularly the rubber chemical houses.

He sailed for Scotland on March 17 for a visit to the plant of the parent Rapson company at Edinburgh and expects to be back at the Tasmanian plant late in May. While in this country he made a careful survey and study of the use of accelerators by the leading manufacturers.

Mr. Taylor reports that the Tasmania plant of his company expects to be in production by June of the curernt year. The company is building an extensive plant at Launceston, on the Tamar River, in Tasmania.

CANADIAN GOODYEAR OPERATING AT PEAK

The Goodyear Tire & Rubber Company of Canada are running all three of their plants at forced capacity and are oversold on production, according to a recent statement of C. H. Carlisle, president and managing director.

The tire and rubber goods plants at New Toronto are running 24 hours a day and the St. Hyacinthe Cotton Mills, 22 hours. The cotton mill is supplying 45 per cent of the company's requirements. Operation of the cotton mill is limited by local restrictions to two shifts, ten and twelve hours.

Mr. Carlisle stated that business this year is better than a year ago, despite the fact that capacity operations ruled throughout 1927. The improvement he attributed to the larger plant capacity of the company today, four additional buildings having been constructed during the year. The new units are now running to maximum capacity with the older divisions of the plant.

Exports of American-made rubber footwear to France increased in value from $22,243 in 1926 to $61,605 in 1927, according to a statement issued by the Department of Commerce. The increase was mostly reflected in the advance in rubber sole and heel exports which grew from $1,929 in 1926 to $44,085 in 1927.

Italy exported approximately 726,300 automobile casings during 1927 as compared with approximately 720,490 casings in 1926, according to a report of the Department of Commerce. The leading markets for Italian tires during the past year included the United Kingdom, Argentine, British India, Dutch East Indies, Germany, Switzerland and Belgium in the order named.

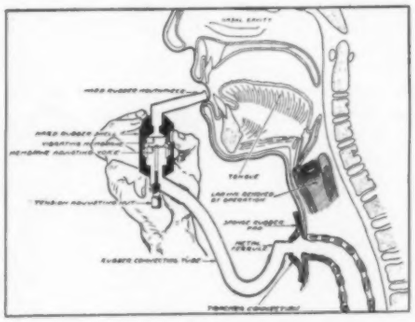
Rubber Goods and Specialties

Rubber Artificial Larynx

A HUMANITARIAN rubber device, designed to replace the larynx or vocal cords which have become useless or have been removed by a surgical operation, has been perfected by Dr. John E. MacKentry, of New York City. The MacKentry-Western Electric 1-A Artificial Larnyx, as the device is called, is being put on the market through the Western Electric Company.

The instrument consists of a rubber membrane which is stretched across the inside of a hard rubber sound box; a pitch regulating device which varies the tension of the rubber membrane and is externally adjusted by means of a thumb nut; a hard rubber mouth piece which fits into the sound box and a sponge rubber connection which is strapped over the trachea opening.

When the apparatus is being used for



McKentry Artificial Larynx

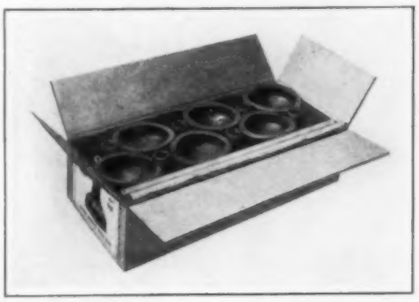
speaking, the air is inhaled through the hole in the side of the sound box and passes through the metal tube at the bottom of the sound box, down through the rubber connecting tube, and through the trachea connection into the respiratory organs. The air when exhaled tends to pass out the way it entered but if the hole in the side of the sound box is closed by the finger or thumb, it is forced out around the rubber membrane.

To Roll the Fat Off

The Magic Reducer Company, 131 Harris avenue, Long Island City, New York, have brought out a massage roller, as shown in the accompanying illustration, which they are marketing under the name of "Magic Reducer." The rolls are of rubber, the surface of which is indented with rows of vacuum cups which, under comparatively light pressure, intensifies the massaging effect. The reducer is simple in construction, is well made and easy to use. It is said to be effective in reducing surplus fat from any part of the body whether it be the arms, stomach, legs, chin, neck or face.

"Magic Reducer" Made of Soft Indented Rubber Rolls

Laurel Force Cups



A new special package and lower prices have been announced by the Laurel Company, Garfield, N. J., for their rubber force cups. These are now packed in dozen lots, as shown in the accompanying illustration, for the reshipping carton trade. The cups are supplied in both red and black rubber. The Laurel Company also manufactures basin plugs, stoppers, tank balls and rubber tubing and mats.

Rubber Recoil Pads

A complete line of rubber recoil pads for shotguns and rifles is being offered to the sporting goods trade by the Jostam Manufacturing Company, 5252 Broadway, Chicago, Ill. The latest developments in this line are the "anti-flinch" and "hy-gun" recoil pads made of red rubber vulcanized on a black hard rubber base plate. Oblong

***Above*—Sponge Rubber Recoil Pad in Leather Boot**
***Left*—Sponge Rubber on Hard Rubber Base**

holes through the soft rubber increase resiliency and take up the recoil from the discharge of the gun or rifle. The company also handles "lace-on" recoil pads containing a sponge rubber base as well as combination recoil and cheek pads.

New Rubber Stamp Toy

A new feature in rubber stamp toys has been brought out by the Fulton Specialty Company, of Elizabeth, N. J., by combining the idea of coloring with crayons with the stamping of pictures. One of their best known selling items has been a combination set of "Who's Who in Farm and Jungle," consisting of large rubber stamps depicting

"Farm and Jungle" Rubber Stamp Toy

various animals and birds together with a set of colored crayons and ink pad. A four-color illustrated booklet instructs the child in combining the stamps to form pictures and teaches him the principles of color combination. The sets are a great improvement over the old-time stencil sets.

Mottled Sponge Rubber Balls

Sponge rubber play balls with attractive mottled markings have been introduced by the Sponge Rubber Products Co., Derby, Conn. This treatment of the sponge ball does not impair its high bouncing quality but adds greatly to its appearance. A wide range of bright colors is used. These blend during the application into a beautiful variegated finish. The mottling is applied to the

Mottled Sponge Ball

ordinary type of play balls shown in the illustration as well as to special numbers such as the ever-popular "come-back" type.

Current Crude Rubber Items

CRUDE PRICES DROP IN NERVOUS MARKET

Heavy Trading Brings Price Levels to New Low Figures—Slight Recovery Made on Renewal of Pool Activity—March Position Touches 23.80.

WHILE there has been a decided downward movement in crude rubber on the New York Rubber Exchange during the past fortnight, a flurry on March 19, when the rubber "pool" was assumed to renew its buying activities, caused prices to advance and recover a great deal of the loss. Spot actually closed on March 20, at the same figure at which it stood on March 7.

The two weeks activity on the Exchange has been characterized by heavy liquidations and the week ending March 17, saw the largest tonnage sold in any week since the inauguration of the Exchange, aggregating 10,184 contracts.

While sales have been heavy over the period, the transactions have largely been speculative and there has been a pronounced absence of factory interest. On March 12 nearby positions had fallen to 23.80, but confidence was somewhat restored later in the week by the rumor that the rubber restriction report of the British Civil Research Committee would prove bullish. March position hovered around 25.50 until March 19, when the "pool" announced that an additional $60,000,000 credit had been procured, of which one-half would be immediately available. The first hour of trading on that day saw 1086 lots sold and for the entire session a total of 2,820 lots, a new record for the Exchange in any one trading day. The transactions involved 15,792,000 pounds of rubber valued at $4,400,000.

The bullish tone was short-lived, however, and on the following day, prices had begun to back-slide.

Exchange Seat Sold

Another advance in the price of memberships on the Rubber Exchange of New York was made March 13 when the seat of E. Chauncey Anderson was sold to Herbert F. Delanie for the account of another for $6,750. This is an advance of $150 in the record price for Exchange seats.

FIRESTONE TALKS BY RADIO WITH LIBERIA

The Firestone Tire & Rubber Company, at Akron, opened up direct communication by radio with Firestone plantations in Liberia on March 19, when Harvey S. Firestone, Jr., who is now on an inspection trip to the plantations, sent the first message to the home office. The distance from station to station was 4,600 miles and the transmitters of both stations operate on a wave length of approximately 43.5 meters. In this message Mr. Firestone reported that the field forces had already laid out 50,000 acres for plantation developments.

PRODUCTION OF RUBBER IN BURMA INCREASING

Burma's rubber exports have doubled in the past three years and local agricultural experts see no reason why Burma, or at least the Tenasserim division in the south, should not become a still larger producer of rubber than at the present time. Large tracts of land suitable for rubber cultivation are available in the five districts composing the division and leases in perpetuity may be obtained on favorable terms.

There is said to be no difficulty in obtaining an adequate supply of labor and easier transportation facilities are assured by an extensive road program which is contemplated to supplement the new railway construction. It is also interesting to note that the Indian Budget for 1927 transferred rubber seeds and rubber stumps from the 15 per cent ad valorem category to the free list.

The exports of raw rubber from India during 1926 reached 23,000,000 lbs., and Burma's share in the trade increased from 46 to 51 per cent, while that of Madras fell from 54 to 49 per cent. The plantations in Burma cover some 38,000 acres, the great majority being in bearing.

BRITISH INTERESTS INVESTIGATE AMAZON

Reports from Brazil indicate that representatives of British interests are investigating the rubber regions of the Amazon with a view to securing concessions for plantation developments. A recent press despatch from Para stated that a represntative of a British syndicate had left for London after announcing that he had found suitable areas for his principals. He had previously made surveys in the Tapajoz valley and surrounding regions.

Brazilian newspapers are debating the advisability of permitting foreigners to obtain large concessions with the conservative press now strongly advocating the granting of such concessions, adding that "the legendary riches of the Amazonian region will remain legendary unless capital is forthcoming for development of the territory."

O'NEIL OPPOSES RUBBER RESEARCH APPROPRIATION

The recent action of the Appropriation's Committee of Congress in approving an appropriation of $100,000 for further rubber research work by the Department of Agriculture was denounced in a statement from William O'Neil, president of the General Tire and Rubber Company, as a waste of public money.

Mr. O'Neil declared that in his opinion Congressional junkets and Far East cruises of Government commissions seeking information which American rubber men already have in their possession will absorb the appropriation almost entirely.

"It is my belief that the private research work now being carried on in our country and tropical America in an effort to develop a rubber supply for war time emergencies is a worthwhile effort," said Mr. O'Neill. "It is also my belief that aside from this, there is no reason why our government should expend money and energy in a field which is delivering the world at large very good service."

Rubber Exports From Amazon

Rubber exports from the Amazon Valley in 1927 reached a total of 28,782 tons or 4484 tons more than yere exported in 1926, according to a report of the Department of Commerce. A stimulus has been given to the crude rubber industry in the region with the announcement of the Ford plantation project in the Tapajoz district, and a renewal of interest on the part of certain British plantation interests.

Closing Prices on Rubber Exchange of New York, Inc.

MARCH 7 TO MARCH 20, 1928

Date		Spot	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Sales*
Mar	7	26.70	26.60	26.50	26.60	26.60	26.50	26.60	26.70	26.70	26.70	26.70	26.80	26.90	2,451
	8	25.50	25.30	25.40	25.50	25.60	25.60	25.70	25.70	25.50	25.80	25.90	25.90	26.00	1,871
	9	25.10	25.10	25.20	25.40	25.40	25.40	25.50	25.50	25.50	25.50	25.50	25.60	25.70	1,921
	10	25.40	25.30	25.40	25.50	25.50	25.40	25.60	25.70	25.60	25.60	25.60	25.70	25.80	440
	12	24.00	23.80	23.90	23.90	24.00	24.00	24.00	24.00	24.00	24.00	24.10	24.10	24.20	1,860
	13	24.50	24.00	24.20	24.40	24.50	24.60	24.70	24.50	24.70	24.80	24.80	25.00	25.00	1,821
	14	25.30	25.30	25.20	25.20	25.40	25.60	25.80	25.90	26.00	26.00	25.90	26.10	26.10	2,294
	15	24.70	24.50	24.70	24.80	24.90	24.90	25.00	25.10	25.10	25.10	25.10	25.20	25.30	6,267
	16	25.20	24.90	25.10	25.30	25.30	25.40	25.60	25.80	25.80	25.80	25.80	25.80	25.80	1,247
	17	25.60	25.50	25.70	25.80	25.90	25.90	25.90	26.00	26.10	26.10	26.10	26.20	26.20	375
	19	28.30	28.00	28.30	28.50	28.60	28.70	28.70	28.70	28.80	28.80	28.90	29.00	29.20	2,820
	20	26.70	26.50	26.60	26.80	26.80	26.80	26.90	27.00	27.10	27.10	27.10	27.20	27.30	1,744

(*) In lots of 2½ tons each

CATALPO!

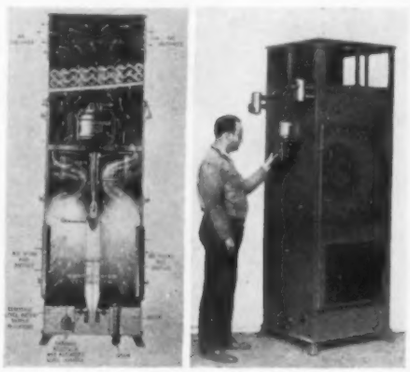
New Equipment for Rubber Factories

Unit Air Conditioner

THE Carrier Engineering Corporation, of Newark, N. J., manufacturers of drying, refrigerating and air conditioning equipment, has recently developed a unit air conditioner which is specially adaptable for the small manufacturer or individual departments of large establishments where no central station system for air conditioning exists. The unit is installed in a compact cabinet 7 feet 8 inches in height, the lateral dimensions being 2 feet 6 inches and 2 feet 8 inches.

The unit is portable and requires only the simplest water, steam and electrical connections. It has a capacity to deliver 2500 cubic feet of conditioned air per minute. A small motor performs the entire work.

In the bottom of the unit is a constant level water reservoir communicating with an inner reservoir to which water is admitted or cut off by automatic control. From this inner reservoir the water is drawn centrifugally into the Centrijector from which the water is discharged in a dense spray.

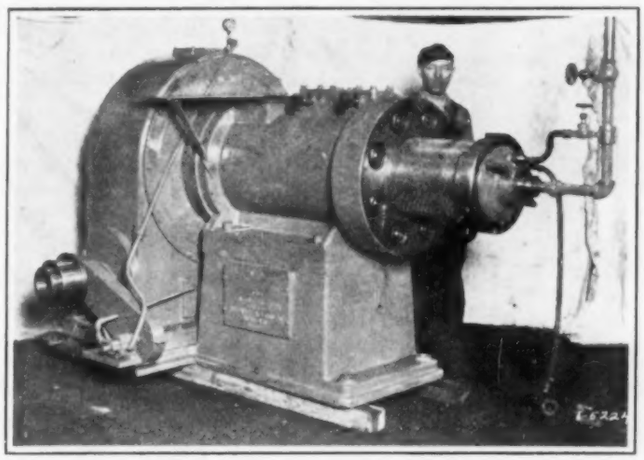


Carrier Unit Air Conditioner

The air is drawn from the room, or from a connection leading outdoors, through the baffle plates in the lower sides of the panels. As the air is drawn in it comes immediately in contact with a dense cloud of finely atomized water. The effect is to wash the air thoroughly, freeing it from all dust and solid matter and to saturate it completely at the temperature of the spray water.

The saturated air is then drawn vertically into a centrifugal fan which discharges it at full pressure into the upper part of the cabinet, thence to the eliminators, a series of metal plates arranged across the area of the cabinet, which allow the free passage of the air but obstruct the passage of all particulars of free, unevaporated water carried from the spray chamber. From there the air passes to the seamless tube, high-pressure heater and is heated to the desired point above the temperature of saturation. It then passes out into the room through the openings in the sides of the cabinet.

Giant Rubber Straining Machine



Williams Giant Straining Machine

THE growing use of straining reclaimed and crude rubber has been given special attention in the design of the latest 10-inch strainer, recently introduced by the Wiliams Foundry & Machine Company, Akron, O.

Though reclaimed rubber has been strained for many years it has only been recently that strainers have been used for crude rubber. Samples of rubber containing pieces of metal, wood and other foreign matter were strained through this Williams machine and all the extraneous matter was separated from the rubber mass and retained by the strainer. Not only is this machine used for cleaning purposes, but the initial mastication which the rubber receives in straining assists materially in breaking down on the mill and in eliminating the drying operation.

The machine has a standard 10-inch worm drive with outboard bearing fitted to the strainer shell cap containing a hardened steel stock worm extension. Cooling water is delivered to the front end of the worm with a deflector provided for forcing the water back from the front. Water is also supplied to the strainer cap by means of flexible hose which can be easily disconnected to facilitate removal of the strainer shell and cap.

AKRON RECLAIMING CO. BUILDS ST. LOUIS PLANT

The Akron Rubber Reclaiming Company is reported to have completed arrangements for the construction of a new $1,000,000 plant at St. Louis, Mo. The new branch will be known as the Midwest Reclaiming Company and will have a capacity of 25 tons a day. Directors of the concern include Thomas N. Dysart, H. H. Knight and Daniel N. Kirby, all of St. Louis. William Welch, vice-president of the Akron Rubber Reclaiming Company at Akron, will have charge of the organization of the new branch. The actual site of the plant will be in Monsanto Village, East St. Louis.

New Carbon Black Plants

The Kosmos Carbon Company, Charleston, W. Va., have recently completed a seven-unit carbon black plant at Alexander, a few miles from Borger, Texas, which is now running practically at capacity. They are also constructing another plant at Norrick, Texas, also near Borger, which will be in partial operation within thirty days. The erection of two additional plants in Texas are contemplated by this company during 1928 and they expect them to be in operation before the close of the year.

New Executive Offices

The new executive offices of the Firestone Tire and Rubber Company, which are now under construction, will be ready for occupancy on April 1. The present offices will be extended to the end of the new wing, with H. S. Firestone, Sr., occupying the corner of the building. The directors' room and assembly hall will be served by their own lobby and reception rooms.

Company Acquires Site

The Serugo Rubber Company is reported to have acquired a site at Atwater, O., for the construction of a rubber factory which will manufacture a line of molded and dipped rubber products.

William Metzler, Akron, is president; John Hatfield, Akron, vice-president and general manager; O. J. Shook, Cuyahoga Falls, secretary; and Charles Sharr, Akron, treasurer. The plant, employing 50 persons at the outset, will begin operations June 1.

SEEK BETTER STANDARDS IN TIRE ADVERTISING

With the support of the tire manufacturers in the United States, as well as the tire dealers' associations, the National Better Business Bureau is seeking to create a movement which aims at the permanent establishment of honest retail tire advertising and sales methods within the industry itself.

At present they point to three abuses in tire selling and advertising. These occur in connection with the merchandising of "rebuilt," "reconditioned" and so-called "double tread" tires; in the sale of factory "rejects" or "seconds"; and as the result of the abuses of mileage guarantees. While there is no legitimate objection to reconstructed tires, there is often an objection to the manner in which they are advertised.

A recently completed survey of the tire field by local Better Business Bureaus has pointed the way toward the adoption of advertising standards which will work for a better understanding between producer and customer. These standards will coincide as nearly as possible with local standards already set up by a number of local bureaus in the more important American cities.

The scope of the National Better Business Bureau's work in this connection will be augmented by discussion to be held with the tire manufacturers and their advertising agents.

Tire Boot Company Builds

The Superior Boot Manufacturing Company, tire boot makers, are constructing a new factory building at Tenino, Wash., where they will soon begin manufacturing operations. B. F. Meyers, who patented the double-laced expansion boot which the company manufactures, states that the construction of the boot allows the center to give so that the hole in the tire is filled, preventing dirt from entering the opening in the casing and holding the boot tightly in place.

TIRE SALESMEN ACTIVE AT BOSTON AUTO SHOW

Although the rubber companies adhered to their established policy in regard to not exhibiting at the automobile show held in Boston March 10 to 17, the sales and branch managers of all the large companies were active at the show in lining up business for the spring opening.

Among the branch managers in Boston are: Fred T. Moore, district manager for B. F. Goodrich Co.; Edward T. Richardson, Boston sales manager for the Dunlop Tire and Rubber Co.; Walter Oakes, district sales manager for the Fisk Tire Company; E. A. McCoy, Boston branch manager for the Kelly-Springfield Tire Company; A. T. McGrath, Boston branch manager of the Firestone Tire and Rubber Company, who recently succeeded E. D. Manley; J. R. Philbrook, New England manager for the Ajax Rubber Company; H. E. Crocker, district manager of the United States Tire Company; Nelson P. James, New England manager for the Miller Rubber Company; Guy D. Niles, New England district manager for the Lee Tire and Rubber Company and E. C. Newcomb of the General Tire Company.

Fred Waterhouse Company, Ltd., announce the removal of their office from 82 Wall street, to 271 Madison avenue, New York City. They occupied their new quarters on March 12.

GENERAL TIRE CO. TO BUILD IN CLEVELAND

The General Tire & Rubber Company has announced plans to erect a new building in Cleveland to accommodate the company's sales force and service departments in that territory. The new building will present many new artistic and unusual architectural features. Plans call for a polygonal structure in the Venetian style, with seven arches flanked by pillars. The exterior will be constructed of steel columns supporting mat-glazed natural terra-cotta. It will be one of the new business buildings of Cleveland where automobile parking of customers cars will be cared for on the premises. Construction is expected to start immediately.

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Manufacturer of

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GOODYEAR ANNOUNCES A PUNCTURE-PROOF TUBE

The introduction of a puncture-proof tube has been announced by the Goodyear Tire & Rubber Company. The new product is the result of two years' experimental work by Goodyear development engineers. It is pointed out in the announcement that while no tube can be made absolutely puncture-proof, the new product will give motorists and commercial users freedom from ordinary puncture troubles.

The new puncture-proof tubes are all-rubber tubes with an extra thick construction on the tread side which automatically seals ordinary punctures by compression. They are unusual in construction and design and it is claimed that they have proved their value in extensive tests made under severe operating conditions. While the tubes actually tend to resist puncture, their construction is such that the tube is also self-sealing in the event a puncture occurs.

In announcing the new tubes Goodyear officials issued a word of warning in connection with their use, pointing out that they are intended for use primarily in special types of service. Tires operating with puncture-proof tubes should be inspected frequently for the removal of glass, nails, etc., which the tires might have picked up and would otherwise be unnoticed with the new tubes in use. This precaution is necessary to prolong the life of the tires.

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Farrel-Sykes Sheeter, 16 x 18 x 44". Completely equipped except for bed plate. In excellent working condition. Also 45 H. P. AC motor. Will sell separate or together. Address Box 478, THE RUBBER AGE.

Two-roll Friction Mill, 16 x 18 x 44". Complete with Bull gear. Can be seen by appointment. Also 45 H. P. AC Motor. Will sell separate or together.
Wilson-Western Sporting Goods Co.,
2037 Powell Ave., Chicago, Ill.

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CATALPO!

LATE MARKET PRICES

Crude, Scrap & Reclaimed Rubber - Cottons and Fabrics

MARCH 20, 1928

COTTON

THE relative steadiness of the cotton market has aided trading during the fortnight but takings have not been unusually heavy. The world mill stocks of American cotton on January 31 represented only a little more than two months requirements at the average monthly rate of consumption during the August, 1927-January, 1928 period, indicating that spinning mills would have to come into the market shortly for additional supplies. On the other hand no pronounced price movement is expected in either direction for the time being. While it is too early for any authoritative estimate on the next crop to be made, considerable plantings have been retarded on account of the recent cold and dry weather in the cotton belt.

High, low and closing prices as of March 19, were as follows:

	Mar. 19			Mar. 5
	High	Low	Close	Close
March	19.11	18.97	18.97	18.44
May	19.18	18.99	19.03	18.58
July	18.90	18.79	18.88	18.41

Tire Fabrics

The tire fabric market has steadied in line with the raw cotton market during the last two weeks and has sufficiently encouraged buyers to the point that several good sized commitments have been taken. Fabric mills are reported operating on multiple shifts in the New Bedford, Mass., district and are planning to go to capacity production as soon as possible. Full time schedules are expected to be the rule up to early fall. Late quotations follow:

CORD				
Peeler, carded, 23/5/3	lb.	.43½	@	.44½
Peeler, carded, 23/4/3	lb.	.44½	@	.45½
Peeler, carded, 13/3/3	lb.	.40	@	.41
Peeler, carded, 15/3/3	lb.	.41	@	.42
Egyptian, carded, 23/5/3	lb.	.54	@	.55
Egyptian, combed, 23/5/3	lb.	.59	@	.60
CHAFERS				
Carded American, 8 oz.	lb.	.37½	@	.38½
Carded, American, 10 oz.	lb.	.40	@	.41
Carded American, 12 oz.	lb.	.38	@	.41
Carded American, 14 oz.	lb.	.37	@	.41
LENO BREAKER				
Carded American, 8¼ oz.	lb.	.39	@	.41
Carded American, 10¼ oz.	lb.	.39	@	.41
SQUARE WOVEN				
Carded American, 17¼ oz. 23-11 ply	lb.	.44	@	.45
Carded American, 17¼ oz. 10-5 ply	lb.	.37	@	.38

Sheetings

The market in sheetings has been constant with very small fractional changes in some constructions over the last two weeks, made more to stimulate buyers than anything else. Latest quotations on the chief grades used in the rubber industry are as follows:

40-inch, 2.50-yard	yd.	.12⅝	@	.12½
40-inch, 2.85-yard	yd.	.10⅝	@	.10⅞
40-inch, 3.15-yard	yd.	.12¼	@	.12
40-inch, 3.60-yard	yd.	.09⅞	@	.10
40-inch 3.75-yard	yd.	.08¼	@	.08½
40-inch 4.25-yard	yd.	.07¼	@	.07½

Ducks

The market in ducks has been quiet and for the most part nominal with a tendency to lower prices in order to meet orders. The activity on the part of buying interests would indicate sufficient stocks on hand and a desire only to secure immediate requirements. This hand-to-mouth trading has been the feature of this market for some time, and as a result no clear price basis prevails on any given construction. Latest quotations follow:

Belting and Hose	lb.	.32½	@	.33
Enameling	lb.	.34	@	.38
Shoe Ducks	lb.	.30	@	.33
Single filling	lb.	.14½	@	.17
Double filling	lb.	.17	@	.18

RECLAIMED RUBBER

In the face of reduced crude rubber prices the quotations on reclaimed remain as last reported but nominal and subject to variations on orders for any considerable volume. Production in reclaimed continues at near capacity levels in most plants and the demand is also steady from consuming factories. The last quarterly figure of the Rubber Association of American showed a higher consumption of reclaimed during the last three months of 1927 than in any other quarterly period of the year and fairly large stocks on hand on December 31. Quoted prices remain as follows:

High Tensile				
Super-Reclaim No. 1 Black	lb.	.16	@	.16½
Super-Reclaim No. 2 Black	lb.	.13½	@	.14
High Tensile Red	lb.	.15¾	@	.16¼
Shoe				
Unwashed	lb.	.08	@	.08¼
Washed	lb.	.10	@	.10½
Tube				
No. 1 (Floating)	lb.	.16	@	.16½
No. 2 (Compounded)	lb.	.13½	@	.14
Tires				
Black, washed		.10	@	.10¼
Black, unwashed		.08¼	@	.08½
Black selected tires	lb.	.08¾	@	.09
Dark Gray	lb.	.11½	@	.12
Light Gray	lb.	.13	@	.13¼
White	lb.	.15	@	.15½
Truck, Heavy Gravity	lb.	.07½	@	.07⅝
Truck, Light Gravity	lb.	.08	@	.08¼
Miscellaneous				
Mechanical Blends	lb.	.07	@	.08
Red	lb.	.14	@	.14½

Scrap Rubber

Prices in the scrap rubber market have felt the effect of lower crude rubber prices and the trend has been downward. A steady demand from reclaimers, however, is contributing somewhat to the steady quotations. Collections have not been heavy but this is not unusual at this season. The latest prices to consumers are as follows and show some sharp declines from the previously quoted levels.

(Prices to Consumer)

Auto tire peelings	ton	35.00	@	37.00
Standard White auto	ton	57.50	@	60.00
Mixed auto	ton	22.00	@	24.00
Bicycle tires	ton	25.50	@	27.50
Clean solid truck tires	ton	22.00	@	24.00
Boots and shoes	lb.	.01¼	@	.01⅝
Arctics, trimmed	lb.	.01⅛	@	.01¼
Arctics, untrimmed	lb.	.01	@	.01⅛
Inner tubes, No. 1	lb.	.07½	@	.07¾
Inner tubes, No. 2, compounded		.04⅞	@	.05
Inner tubes, Red	lb.	.07	@	.07¼
Air Brake Hose	ton	38.00	@	40.00
Rubber Hose	ton	18.00	@	20.00

CRUDE RUBBER

THE New York outside crude rubber market has followed the Rubber Exchange in the downward price movement in all grades during the last two weeks and, in view of the highly speculative character of the market, has enjoyed very little real business except in some off qualities which were at especially attractive low prices. Practically all factory interests were too much interested in the declines on the London and New York exchanges to enter such an unsteady market. Shipments continued from the East in fair volume to swell the already high stocks on hand. However, the consumption figures for February proved encouraging to the trade and showed that production schedules were being maintained at high levels. Within the last two days there has been something of a recovery in price levels but the market still remains below 28 cents and there is a persistent rumor of "25 cent rubber" as a prevailing level for some time.

Prices on the New York outside market on March 19, were as follows:

Plantations—			
Ribbed Smoked Sheets—			
Spot	.28	@	.28½
March	.28	@	.28½
April-May	.28½	@	.29
First Latex, crepe spot	.28	@	.28½
Amber Crepe, No. 2	.26½	@	.27
Amber Crepe, No. 3	.26	@	.26½
Amber Crepe, No. 4	.25½	@	.26
Brown Crepe, Rolled	.21½	@	.22
Brown Crepe, Clean, thin	.26	@	.26½
Brown Crepe, specky	.24½	@	.25
Liquid Latex, per gal.		@	1.50
Paras—			
Up-river Fine	.24¼	@	.24½
Up-river Medium	.21	@	.21½
Up-river Coarse	.19	@	.19½
Acre Bolivian, fine	.24½	@	—
Caucho Ball, Upper	.19	@	.19½
Islands, fine	.20½	@	.21
Centrals—			
Central, scrap	.17	@	.17½
Esmeraldas	.17	@	.17½
Guayule, washed and dried	—	@	.22
Balata—			
Block, Colombia	.38	@	—
Block, Cuidad	.39	@	—

LONDON MARKET

Standard Ribbed Smoked Sheets—Buyers			
Spot	.13	@	.13¼d
March	.13	@	.13⅛d
April-June	.13⅜	@	—

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—Sellers			
Spot	.12½	@	.12¾d

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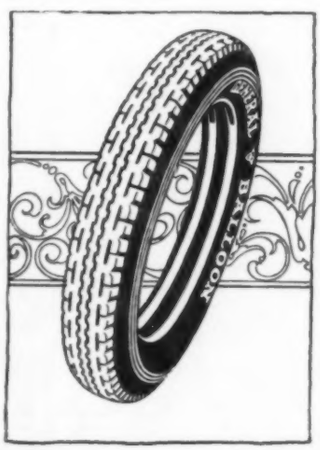

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LATE RUBBER CHEMICAL PRICES

Accelerators — Colors — Softeners — Compounding Materials

MARCH 20, 1928

CONDITIONS in the rubber manufacturing industry remain practically unchanged during the last fortnight. Factories are continuing their high production schedules and are maintaining a steady demand for rubber compounding materials. Producers of all kinds of chemicals and pigments report excellent conditions in practically every branch of the industry. Blacks have been moving steadily on contract and lithopone demand has been in good volume. A number of minor price changes are reported, especially among the resin softeners and waxes. Zinc carbonate is quoted at 9½ to 10½ cents, a decrease of 1½ cents per pound. A new accelerator Aero-X has been announced and is listed here for the first time at 75 cents per pound. Quotations follow:

ACCELERATORS

Organic			
A-7	lb.	.65 @	.85
A-11	lb.	.70 @	.90
A-16	lb.	.65 @	.85
A-19	lb.	.70 @	.90
A-20	lb.	.64 @	.80
Aero-X	lb.	.75 @	—
Aldehyde ammonia, crystals	lb.	.66 @	.70
Aniline oil, drums, f.o.b. works	lb.	.15 @	.16¼
Cryiene	lb.	.70 @	—
paste	lb.	.50 @	—
Di-Ortho-Tolyiguanidine	lb.	.80 @	.85
Diphenyiguanidine	lb.	.64 @	.68
Ethyiidene aniline	lb.	.60 @	.65
Formaldehyde Aniline	lb.	.36 @	.38
Grasselerator 102	lb.	.62½@	.67½
Grasselerator 552	lb.	4.45 @	4.60
Grasselerator 808	lb.	1.05 @	1.35
Grasselerator 883	lb.	1.50 @	1.75
Heptene	lb.	.55 @	—
Hexamethylene-tetramine	lb.	.62½@	.67½
Lithex	lb.	.18 @	.20
Methylenedianiiide	lb.	.38 @	.40
Monex	lb.	3.25 @	—
Oxynone	lb.	.68 @	.90
Para-Nitrosodimethylaniline, f.o.b. works	lb.	.92 @	.96
Piperidine-Piperidyidithio-Carbamate	lb.	4.45 @	4.60
R & H 40	lb.	.50 @	.55
R & H 50	lb.	.50 @	.55
Safex	lb.	1.20 @	1.25
Tensilac, No. 39	lb.	.55 @	.60
Tensilac, No. 41	lb.	.65 @	.70
Thermio F	lb.	.50 @	.55
Thiocarbanilide, drums	lb.	.25½@	.26½
Thionex	lb.	3.25 @	—
Trimene	lb.	.75 @	—
base	lb.	1.20 @	1.35
Triphenyiguanidine	lb.	.65 @	.70
Vulcanex	lb.	.82 @	.86
Vulcone	lb.	.70 @	.74
Vulcanol	lb.	1.05 @	1.08
Z 88	lb.	.75 @	1.00
Inorganic			
Lead, sublimed blue	lb.	.08¼@	.08¾
Lead, white	lb.	.10½@	.12½
Litharge, domestic	lb.	.09 @	.09¼
Magnesia, calcined, light	per 100 lb.	5.35 @	5.45
heavy	per 100 lb.	3.65 @	3.75

COLORS

Blacks (See Compounding Materials)			
Blues			
Prussian	lb.	.33 @	.35
Ultramarine	lb.	.06 @	.30
Browns			
Sienna, Italian	lb.	.05 @	.12½
Umber, Turkey	lb.	.04½@	.07
Greens			
Chrome, light	lb.	.27 @	.31
medium	lb.	.29 @	.32
dark	lb.	.31 @	.34
Chromium Oxide, bbl.	lb.	.28 @	.32
Reds			
Antimony crimson, 15/17	lb.	.40 @	—
sulphur free	lb.	.50 @	.52
golden 15/17 F.S.	lb.	.16 @	.25
Indian English (dom.)	lb.	.08 @	.10
Oximony	lb.	.13¼@	—
Red oxide, reduced	lb.	.10 @	.11
pure	lb.	.14 @	.15
Venetian red	lb.	.02 @	.06
Vermillion, quicksilver, English	lb.	1.75 @	1.85
Whites			
Lithophone, Akeolith	lb.	.05 3/5@	.06
Lithophone, Azolith	lb.	.05¼@	.05¾
Lithopone, Vanolith	lb.	.05¾@	—
Titanox	lb.	.10 @	.10½
Cal. Base Pigment	lb.	.10 @	.10½
Zinc Oxide—American Process			
American Azo:			
ZZZ (lead free)	lb.	.06½@	.07
ZZ (leaded)	lb.	.06⅝@	.07⅛
Zinc Oxide—French Process			
White seal	lb.	.11⅞@	—
Green seal	lb.	.10⅞@	—
Red Seal		.09⅞@	—
Yellows			
Chrome	lb.	.15½@	.16½
Ocher, French medium	lb.	.03½@	.06
domestic	lb.	.01⅝@	.02

COMPOUNDING MATERIALS

Aluminum Flake	ton	21.85 @	24.50
Ammonia carbonate	lb.	.10½@	.12
Asbestine	ton	14.75 @	18.00
Barium carbonate	lb.	.03½@	.05
Barium Dust	lb.	.05 @	.06
Barytes southern off-color,	ton	12.00 @	18.00
Western prime white	ton	23.00 @	—
imported	ton	27.00 @	36.00
Basofor	lb.	.04½@	—
Blacks			
Arrow "Aerfloted"	lb.	.08 @	.12
Bone Black	lb.	.05½@	.11
Carbon, compressed	lb.	.07½@	.11½
Carbon, uncompressed	lb.	.07 @	.11
Drop Black	lb.	.06 @	.10
Lamp Black	lb.	.12 @	.40
Micronex	lb.	.08 @	.12
Velvetex carbon	lb.	.04 @	.07
Blanc fixe dry f.o.b. works	lb.	.04¼@	.04½
Carrara filler	lb.	.01¾@	.02
Catalpo (fact.)	lb.	.02 @	—
Chalk	ton	12.00 @	14.00
Clay, China, domestic	ton	8.00 @	9.00
Aerfloted Suprex	ton	9.00 @	20.00
Mineral Flour, c. l. fob mine	ton	20.00 @	23.00
Tensulite		15.00 @	—
Glues, extra white	lb.	.20 @	.24
medium white	lb.	.20 @	.24
common bone	lb.	.14 @	.15
Magnesia, carbonate	lb.	.08½@	.11
Mica, powdered	ton	90.00 @	100.00
Rotten Stone (powdered)	lb.	.02½@	.04½
Soapstone, powdered	ton	15.00 @	22.00
Starch, powdered	cwt.	3.30 @	3.70
Talc, domestic	ton	12.00 @	15.00
Velvetex	lb.	.04 @	.07
Whiting, commercial	cwt.	.85 @	1.00
English cliffstone	cwt.	1.50 @	—
Superfine	ton	10.00 @	12.00
Witco	ton	12.00 @	—
Wood pulp XXX	ton	45.00 @	—
Wood pulp X	ton	25.00 @	—
Zinc Carbonate	lb.	.09½@	.10½

MINERAL RUBBER

Genasco (factory)	ton	50.00 @	52.00
Montezuma, solid	ton	28.00 @	36.00
Montezuma, granulated	ton	32.00 @	42.00
Paradura	ton	62.50 @	65.00
Pioneer, MR, solid	ton	42.00 @	45.00
Pioneer-granulated	ton	52.00 @	55.00
Robertson, MR, solid	ton	34.00 @	80.00
M.R. (gran)	ton	38.00 @	80.00

SOFTENERS

Acids			
Nitric, 36 degrees	cwt.	5.00 @	5.25
Sulphuric, 60 degrees	ton	10.50 @	11.50
66 degrees	ton	15.00 @	16.00
Tartaric, crystals	lb.	.31½@	—
Acids, Fatty			
Stearex	lb.	.10 @	.14
Stearic, single pressed	lb.	.10 @	.11
Double pressed	lb.	.11½@	.12
Alkalies			
Caustic soda, 76%	cwt.	3.76 @	3.91
Soda ash, 58% C.L.	cwt.	1.42½@	1.45
Oils			
Castor, No. 3 bbls.	lb.	.13½@	.14
Corn, crude, bbls.	lb.	.09¼@	.11
refined	lb.	.11 @	.11½
Cottonseed, crude		.08½@	.08¾
Cycline	gal.	.27 @	.34
Degras	lb.	.04¼@	.04½
Fluxrite	lb.	.05 @	.06
Glycerine, C.P. drums	lb.	.26 @	.26½
Linseed, Raw C.L. bbl.	lb.	.09½@	.10
Palm Lagos	lb.	.07¼@	.07½
Niger	lb.	.07¾@	.08
Vansulol	lb.	.10½@	—
Para-Flux	gal.	.17 @	—
Peanut, domestic, crude	lb.	.12 @	.12¼
Petrolatum, white	lb.	.08½@	.09
dark amber	lb.	.03⅝@	.03½
Pine, steam distilled	lb.	.67 @	.69
Rapseed, refined	gal.	.80 @	.82
Rosin, first rectified	gal.	.55 @	—
second rectified	gal.	.58 @	—
Resins and Pitches			
Pitch, Burgundy	lb.	.06½@	.07½
coal tar	gal.	.05½@	.06
pine, 200 lb. gr. wt.	bbl.	9.00 @	10.00
Rosin, grade K, 280 lb. bbl.		10.25 @	—
Pigmentar	gal.	.33 @	.41
Tar Retort, 50 gal.	bbl.	12.50 @	13.00
Solvents			
Acetone, pure	lb.	.14½@	—
Alcohol denatured, No. 1 bbls.	gal.	.37½@	.44½
Benzol, 90%	gal.	.28 @	—
pure		.29 @	—
Carbon bisulphide	lb.	.05½@	.06¼
Carbon tetrachloride		.06¾@	.07½
Motor gasoline, steel bbls.	gal.	.17 @	—
Naptha, V. M. & P.	gal.	.13½@	—
Turpentine, spirits	gal.	.57½@	.58½
wood	gal.	.43 @	—
Waxes			
Beeswax	lb.	.56 @	.58
Carnauba	lb.	.40 @	.50
Ceresin, white	lb.	.10 @	.11
Montan, crude	lb.	.07 @	.07½
Ozokerite, black	lb.	.24 @	.25
green	lb.	.26 @	.30
Miscellaneous			
RSL Mold Solution	gal.	.75 @	.100

ANTI-OXIDANTS

Antox	lb.	.79 @	.83
Neozone	lb.	.74 @	—
Oxynone	lb.	.68 @	.90
Resistox	lb.	.60 @	.70
Stabilite	lb.	.65 @	—
VGB	lb.	.55 @	.66

SUBSTITUTES

Black	lb.	.08 @	.14
White	lb.	.10 @	.16
Brown	lb.	.08 @	.15

VULCANIZING INGREDIENTS

Sulphur Chloride (drums)	lb.	.03½@	.06
Sulphur flour,			
Superfine bags	cwt.	2.20 @	2.80
Superfine, bbls.	cwt.	2.55 @	3.10
100% pure, refined, bags	cwt.	2.80 @	3.15
bbls.	cwt.	2.95 @	3.50

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with a reputation

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Stocks at New York and Cincinnati

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Retread Equipment
Engraving Machines
India Core and Chucks
India Self-Acting Drums
Watchcase Vulcanizers
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Made by
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Formerly Brooklyn Shield & Rubber Co., BROOKLYN, N. Y.

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CARTER BELL STANDARD SINCE 1903 RUBBER SUBSTITUTES
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Entire freedom from bead trouble in the construction of straight side tires is assured by the use of either National "(Patent)" High Tensile Strength, Flat Woven, Bead Braid on our new (Pratt Patent) Bead Cables. These cables, made to dimensions specified, have seven strands, yet only one piece of wire is used without soldered, welded or brazed joint.

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Niles, Michigan

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A Section Devoted to Listings of Leading Producers and Distributors of Raw Materials, Machinery and Equipment, and Supplies for the Rubber Industry.

The Market Place

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ACCELERATORS
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E. I. du Pont de Nemours & Co., Inc.
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Grasselerator 833 Grasselerator 808
Grasselli Chemical Co.
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LAMPBLACK
QUINOIDINE
R. W. Greeff & Co.
64 Water St. New York

ACCELERATORS
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Para-Nitrosodimethylaniline
Thiocarbanilide
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Manufacturers for forty years
940 Old South Bldg., Boston, Mass.
612 Metropolitan Bldg., Akron, O.

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Clay—Mineral Flour, Seminole (Georgia).
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Labels—all-rubber two color brands.
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ACCELERATORS
A-7 A-11 A-16 A-19 A-20 Z-88
THIOCARBANILIDE-OXYNONE
FORMALDEHYDE-ANILINE
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Not only has the rapidly increasing number of advertisers in this section necessitated the addition of an extra page each issue, but the new arrangement of placing each listing in its proper classification will make THE MARKET PLACE of greater usefulness to our readers and advertisers.

THE MARKET PLACE Section Continued on Next Page

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Chemical and Compounding Materials (continued)

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Prompt service—let us quote you.

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The Akron Standard Mold Co.
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SWING JOINTS
Specify Bridgwater Service

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Kuhlke Machine Co.
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Also Non-Skid Engraving Machines. Licenses for Watch-case Heaters and India Cores & Chucks.

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Akron, Ohio

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Machinery and Equipment (continued)

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For cutting all rubber, composition and plain or impregnated fabrics.
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John Royle & Sons
Paterson New Jersey

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R. Gelb & Sons
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We have on hand, ready for prompt shipment, guaranteed machinery for every branch of the rubber trade.
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Trenton, N. J. Akron, O.

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New and Old Rubber Scrap
Rubber Cloth Remnants
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use vast quantities of raw materials and equipment. Let the industry know how well you can serve it through a listing in this section.

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Manufacturers of all classes of Rubber Goods.
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Try It!

YOUR PRODUCTS
Should be displayed in
THE MARKET PLACE
Show What You Have to Sell

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Rubber — Crude, Scrap, Reclaimed

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"Quality Grades Since 1898"
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Well Known Standards
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Uniformity, reliability, cleanliness.
Pequanoc Rubber Co.
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A standardized grade for every requirement.
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"44 Years Serving the Industry Solely as Reclaimers"

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washed and dried ready for compounding.
Continental Rubber Co.
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of Standardized Quality
NO. 188 FOR TUBES
Philadelphia Rubber Works Co.
New York Akron Philadelphia

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CAPACITY 250,000 Pounds Daily

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of superior quality, finely ground for all manufacturing purposes
Acme Oil Corporation
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For All Purposes
Rubber Regenerating Co.
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Always Buying and Selling
Rubber Waste, Cured and Uncured, Hard Rubber, Balata, Gutta Percha.
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Testing, formulae, costs, experimental work on all classes of rubber products. Litigation.
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5 William St. Belleville, N. J.

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LAWRENCE & CO.
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Specializing on Rubber Reclaiming—Organizing — Controlling — Research — Buildings Machinery—Formulas.
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TIRES & TUBES
CRUDE RUBBER

STATISTICAL SECTION

AUTOMOBILES
GASOLINE

PRELIMINARY figures covering the imports of crude rubber into the United States during February show a decline from the amount brought into the country in January but late weekly figures showing the rubber invoiced to the United States and now afloat would indicate that shipments are not slowing up. The consumption of crude rubber during February was 33,702 tons which was considered very satisfactory by the trade and was evidence that high production schedules were being maintained by the manufacturing industry. On the other hand, the figures of the Rubber Association of America showed that consumption was lower in the last quarter of 1927 than in any other quarterly period of the year.

PLAN OF THE SECTION

The statistics included in this section have been chosen for their constant importance to the rubber industry. The tables are reprinted in the same relative position in every issue, each table being kept current by the addition of new figures as soon as they become available. The section accordingly affords the most up-to-date, complete and convenient statistical service in the industry.

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United States Rubber Imports and Exports
Rubber Consumption in the United States
Rubber Invoiced to the United States
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Stocks of Crude Rubber in the U. S.
Stocks of Crude Rubber in London
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Automobile Production—U. S. and Canada
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United States Consumption of Gasoline
Rubber Exports from Producing Countries
Rubber Imports into Consuming Countries

London stocks continue to decline by a small tonnage each week but the stocks on hand and afloat to the United States have increased slightly.

The crude rubber markets in London and New York continued to show weakness and prices during the past fortnight declined to new low levels. On the Rubber Exchange nearby positions went below 24.00 cents but have reacted slightly within the last few days.

Automobile production showed a national increase reflecting the renewed activities in that industry.

Latest figures covering imports and exports of rubber in the leading producing and consuming markets are included in appropriate tables in this section.

U. S. Imports and Exports of Crude Rubber

	Gross Imports			Re-exports			Net Imports
YEARS	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons	Total Declared Value	Average Declared Value per pound Cents	Long Tons
1921	185,394	73,772,677	17.76	5,716	2,414,924	18.86	179,678
1922	301,076	101,843,188	15.10	4,809	1,921,828	17.84	296,267
1923	309,144	185,060,304	26.72	8,772	5,672,319	28.87	300,372
1924	328,056	174,231,381	23.71	10,309	6,057,637	26.23	317,747
1925	396,642	429,705,014	48.36	14,827	19,847,753	59.76	381,815
1926	413,338	505,817,807	54.63	17,671	22,470,583	56.77	395,667
1927	425,142	338,998,697	35.59	27,775	24,735,488	39.77	403,472
1926:							
Jan.	42,404	72,528,151	76.36	2,084	3,747,505	80.28	40,320
Feb.	32,865	58,733,370	79.78	1,430	2,280,168	71.17	31,435
Mar.	42,152	70,589,581	74.76	1,836	2,735,284	66.51	40,316
Apr.	34,544	48,742,539	62.99	1,128	1,605,093	63.58	33,416
May	29,756	36,896,080	55.35	1,052	1,558,987	66.17	28,704
June	24,900	34,498,561	61.85	1,105	1,371,217	55.41	23,795
July	35,820	33,061,470	41.20	1,554	1,743,854	50.09	34,266
Aug.	27,400	24,670,752	40.21	1,318	1,339,563	45.38	26,082
Sept.	37,112	32,625,032	39.02	1,437	1,519,870	47.20	35,675
Oct.	29,333	25,300,483	38.50	1,366	1,316,270	43.02	27,967
Nov.	38,925	34,661,631	39.97	1,482	1,320,461	42.00	37,443
Dec.	37,754	33,261,366	39.33	1,904	1,841,305	43.16	35,850
1927:							
Jan.	43,340	36,753,719	37.99	1,526	1,444,734	42.22	41,814
Feb.	28,338	23,110,257	36.41	2,451	2,277,297	41.47	25,887
Mar.	35,514	28,693,026	36.07	2,763	3,249,665	52.50	32,751
Apr.	46,202	37,284,806	36.15	1,575	1,428,425	40.45	44,627
May	36,543	30,998,657	37.87	2,782	2,501,562	41.74	33,761
June	33,045	27,333,770	36.28	1,775	1,550,592	38.99	31,270
July	37,678	31,678,259	37.53	1,958	1,560,853	35.58	35,720
Aug.	32,810	26,396,904	36.59	1,809	1,382,768	34.49	31,001
Sept.	33,301	23,852,857	33.73	3,500	3,036,929	34.91	29,801
Oct.	30,184	22,163,044	32.77	2,513	2,042,713	36.29	27,671
Nov.	38,113	27,039,129	31.67	2,468	2,014,196	36.43	36,123
Dec.	30,696	22,183,601	32.26	2,654	2,245,754	37.77	28,042
1928:							
Jan.	39,108	30,278,444	34.56	1,988	1,734,990	38.95	37,552
Feb.*	31,098	25,375,584	36.44				
Mar.							
Apr.							
May							
June							
July							
Aug.							
Sept.							
Oct.							
Nov.							
Dec.							

*Official estimates based on arrivals at New York and Boston.

U. S. Consumption of Crude Rubber

(Rubber Association of America statistics raised to 100 per cent—All figures in long tons)

Figures on Monthly Basis

	1921	1922	1923	1924	1925	1926	1927	1928
Jan.	5,045	16,938	30,106	29,058	29,638	32,196	31,518	34,403
Feb.	5,955	14,767	30,149	25,736	29,761	31,136	30,137	33,702
Mar.	9,190	21,408	36,629	28,385	33,498	32,936	36,141	
Apr.	13,084	19,294	29,085	27,129	34,139	32,696	35,871	
May	16,023	23,246	36,155	25,845	35,322	29,364	34,592	
June	16,142	31,713	24,272	22,753	35,822	28,598	33,801	
July	18,310	24,522	17,685	23,396	36,053	27,577	29,219	
Aug.	23,649	29,361	20,359	28,982	35,909	34,533	33,460	
Sept.	16,705	24,410	17,594	31,497	31,691	32,904	27,214	
Oct.	16,814	26,881	21,321	31,520	29,047	29,836	26,790	
Nov.	14,105	24,950	20,437	27,289	28,853	28,080	26,792	
Dec.	15,482	25,070	21,902	27,199	28,748	26,293	25,492	
Totals	170,504	282,560	305,694	328,769	388,481	366,149	371,027	

Figures on Quarterly Basis

Quarter	1921	1922	1923	1924	1925	1926	1927
Jan./Mar.			96,776	87,609	95,263	94,301	99,216
Apr./June	65,463	127,360	89,493	75,674	104,099	87,109	103,242
July/Sept.			55,621	83,813	99,493	93,793	89,210
Oct./Dec.	105,962	155,067	63,617	92,656	85,789	83,212	80,860
Totals	171,425	282,427	305,507	339,752	384,644	358,415	372,528

Note—The Rubber Association estimates its monthly rubber consumption figures to be 90 per cent complete. Up until 1925 the quarterly figures were likewise estimated to be 90 per cent complete; beginning with 1925 an estimate of 92 per cent completeness has been used. These estimates have been used in raising the figures in this table to 100 per cent. The quarterly figures are generally regarded as the most authentic; the monthly figures may be accepted as preliminary.

Rubber Invoiced to the U. S.

(Reported by American Consuls—Quantities in Long Tons)

During the Week Ended	From Br. Malaya	From Ceylon	From Dutch East Indies	From London & Liverpool	Total
January 14	4,546	475	1,200	302	6,523
January 21	4,654	1,290	2,518	608	9,070
January 28	4,469	420	975	212	6,076
February 4	3,733	948	1,779	668	7,128
February 11	4,994	733	1,089	1,155	7,971
February 18	4,717	1,256	1,469	1,147	8,589
February 25	6,147	613	1,664	240	8,664
March 3	3,865	618	1,576	1,756	7,815
March 10	4,789	685	1,376	1,951	8,801
March 17	3,981	487	1,463	1,856	7,787

Daily Spot Closing Prices of Ribbed Smoked Sheet Rubber—*New York Market, in Cents per Pound*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Ave.
1925																																
July	81¼	81⅞	85⅜	—	—	88⅛	90½	95⅛	94⅞	99⅞	106½	—	110	105⅜	110⅝	117	116⅝	118⅞	—	121	117⅛	119	117⅜	112¼	112¼	107⅞	96⅝	93¼	89⅞	93⅝	103⅛
August	94½	—	95⅞	85⅜	85⅜	86⅜	81⅝	79	—	71⅝	72½	76½	81½	80⅝	77⅝	117	78¼	80½	80½	83½	82½	82⅝	82	82½	85¼	85⅞	85⅝	87⅛	90	88	88⅛
September	88⅜	85	87¼	81¼	—	—	78¼	80½	86½	—	92½	92	—	93⅜	92⅜	93⅜	92⅜	92⅜	94⅜	—	92	93⅛	93½	90	89	89⅝	91⅝	91½	91	88⅝
October	91¼	91⅜	92	94½	97	97	99	101	—	99½	100½	101⅜	104½	105½	97	99⅜	107	109	99	102	102	99¾	99¾	99¾	98	99½	99⅝	101½	99¼	100⅛	98
November	—	99⅜	—	98⅜	100	—	100⅛	—	98⅜	99½	100⅛	101⅜	104½	105½	—	101	109	107	109⅜	110⅜	110½	109	106¼	106¾	—	108⅜	108⅝	—	107	104⅜
December	106⅝	108½	107⅜	107¼	108⅛	—	108	109	109⅜	106	105⅜	105½	—	101	—	99¼	90¾	93	88⅜	86⅝	—	88¼	90¾	88⅝	88⅝	—	—	91	91¼	91¼	98½
1926																																
January	—	—	—	87	87¾	85½	86½	87½	87⅜	—	88½	88¼	88¼	82½	—	84½	82½	—	75½	75	75	72	72½	—	68	66½	67	69¼	70½	69	—	79½
February	—	67	67½	66¾	68	—	—	69	67	65	66	66	63	60½	61	60	60½	62	59	60	61½	61	61½	55	53	51	51	61¾	—	—	62¾
March	—	55	58	53½	53½	53½	57½	58	56	55½	56	61	61½	60½	62	61	60½	62	61	61	61½	61	60	59½	60	60	59½	58½	58	58	59
April	—	59	—	59	59	58	56	56	55½	61	60	63	—	61½	62	62	60½	61	61	61	61½	61	60	48	48	48	48	48½	48½	48½	—	51¼
May	—	48½	—	50	49¼	49¾	49¾	49¾	56½	53	—	51½	50½	48½	—	49¼	47¾	47½	48	48½	47½	47½	47½	48	46	45	45	46	45	45	—	47⅜
June	—	41½	42	50¼	49¼	49¾	49¾	49½	—	49½	49½	49	47½	47½	47½	47½	47	47½	47½	47½	47½	47½	47½	44	44	43	43	43½	43	43	—	47⅜
July	—	42	42	42	41½	41½	41½	41½	—	41½	43½	43½	43½	43½	43½	43	43	43	43	43	43	43	43	44	44	43	43	43½	42	42	—	42½
August	—	—	42	38⅜	38⅜	—	41½	41½	41½	41½	37½	37½	37½	37½	37½	37½	37½	38	38	40	40	40	40	41	41½	41½	41½	41½	42	42	—	41⅛
September	—	40¼	40¾	40¾	40¾	—	41½	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40½	40¼	40¼	39½	39¼	39	39	39½	39½	40	—	39⅝
October	—	43	—	43¼	42¾	42¾	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42¾	42½	42½	42½	42¾	42¾	42½	42½	42½	42½	—	—	42½
November	—	41¼	—	41	41¼	41½	41½	41½	41½	42⅜	41½	41½	41½	41½	41½	41½	41½	41½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	—	—	42½
December	—	36¾	—	37½	37½	—	37	37	37	37½	37½	—	41¼	41¼	41¼	41¼	41¼	41¼	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	42½	—	—	42½
1927																																
January	—	—	—	38½	39	39¼	39⅜	40¾	40¾	40¼	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
February	—	37¾	—	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½	37½
March	—	39¾	—	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼
April	—	41¼	—	41	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼	41¼
May	—	41	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
June	—	40¾	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
July	—	40¾	—	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾	40¾
August	—	35½	—	—	—	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾	35¾
Sept.	—	34	—	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾
Oct.	—	35	—	35¾	35¾	35¾	35¾	35¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾	33¾
Nov.	—	40½	—	40¾	40¾	40¾	40¾	40¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾	36¾
Dec.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1928																																
January	—	37½	—	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾	37¾
February	—	29	—	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾	28¾
March	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
April	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Spot Closing Prices—Ribbed Smoked Sheets

(New York Market)

Average Price per Pound for Years 1910-1921

Year	Cents	Year	Cents	Year	Cents
1910	206.60	1914	65.33	1918	60.15
1911	141.30	1915	65.85	1919	48.70
1912	121.60	1916	72.50	1920	36.30
1913	82.04	1917	72.23	1921	16.36

Average Monthly Price per Pound Since 1922

Months	1922 Cents	1923 Cents	1924 Cents	1925 Cents	1926 Cents	1927 Cents	1928 Cents
Jan.	18.82	32.73	25.86	36.71	79.50	38.75	40.25
Feb.	16.12	35.14	25.29	36.01	62.25	38.25	32.75
Mar.	14.53	34.21	22.83	41.00	59.00	41.04	
Apr.	15.99	32.48	22.51	43.64	51.25	40.86	
May	15.25	27.39	18.89	58.47	47.75	40.76	
June	15.11	26.88	18.81	77.26	42.50	37.25	
July	14.67	26.10	22.16	103.16	41.03	34.44	
Aug.	13.93	28.84	26.17	82.99	38.50	35.12	
Sept.	14.44	28.95	27.56	88.88	41.00	33.67	
Oct.	19.78	26.93	31.13	98.01	42.50	34.32	
Nov.	23.88	27.14	34.33	104.80	38.50	37.58	
Dec.	27.42	26.60	37.88	98.51	38.25	40.63	
Average for Year	17.50	29.45	26.20	72.46	48.50	37.72	

London Closing Prices of Ribbed Smoked Sheet

(In Pence Per Pound)

Sixth Restriction Year—Second Quarter

Day	Feb.	Mar.	Apr.	Day	Feb.	Mar.	Apr.
1	18⅝	13⅞		17	15⅝	12¼	
2	17⅝	13¾		18	15¼	—	
3	18	13¾		19	—	13⅛	
4	17⅞	—		20	14¾		
5	—	13⅝		21	14⅜		
6	17¾	13½		22	14⅜		
7	17¾	12⅝		23	14⅝		
8	17⅞	12⅛		24	13⅜		
9	16¼	12⅛		25	13⅝		
10	16⅛	12½		26	—		
11	16⅝	—		27	14		
12	—	11¾		28	14⅛		
13	15⅞	11½		29	13⅞		
14	15⅝	11⅝		30			
15	15⅝	11⅜		31			
16	15½	12⅛					

(The average price for the period for which daily prices are reported above is approximately 14.530 pence. The British Colonial Secretary has announced that only 60% of the standard production will be exportable from the restricted area during the next quarter if the price during the entire current quarter does not average at least 21 pence.)

Average Price in Previous Quarters

Quarter	1922-23	1923-24	1924-25	1925-26	1926-27	1927-28
Nov.-Jan.	14.285	14.175	17.9983	46.709	19.265	19.023
Feb.-Apr.	16.858	12.917	19.356	28.103	19.696	
May-July	14.242	10.947	38.469	21.001	18.165	
Aug.-Oct.	14.944	14.632	43.269	20.199	16.620	

Spot Closing Cotton Prices

(Middling Upland Grade—New York Market)

Recent Daily Price Per Pound

Day of Month	Feb. Cents	Mar. Cents	Day of Month	Feb. Cents	Mar. Cents	Day of Month	Feb. Cents	Mar. Cents
1	17.75	18.95	11	18.50	——	21	18.50	
2	17.45	18.90	12	——	19.00	22	——	
3	17.65	18.70	13	——	19.05	23	18.50	
4	17.50	——	14	18.70	19.10	24	19.00	
5	——	18.95	15	18.45	19.20	25	19.00	
6	17.90	18.90	16	18.45	19.50	26	——	
7	18.05	18.95	17	18.35	19.65	27	19.00	
8	18.15	18.95	18	18.50	——	28	18.70	
9	18.25	18.95	19	——	19.45	29	18.90	
10	18.45	18.95	20	18.60		30	——	
						31	——	

Average Monthly Price Per Pound

Month	1926 Cents	1927 Cents	1928 Cents	Month	1926 Cents	1927 Cents	1928 Cents
Jan.	20.85	13.42	19.12	Aug.	18.57	20.04	——
Feb.	20.60	14.10	18.40	Sept.	17.02	21.95	——
Mar.	19.35	14.32	——	Oct.	13.14	20.55	——
Apr.	19.13	14.75	——	Nov.	12.86	20.22	——
May	18.92	16.07	——	Dec.	12.68	19.58	——
June	18.57	16.85	——	Average for Year	17.53	17.49	——
July	18.71	18.00	——				

Stock of Crude Rubber in the U. S.

(All Quantities in Long Tons)

At	ON HAND			AFLOAT			ON HAND AND AFLOAT		
End of	1926	1927	1928	1926	1927	1928	1926	1927	1928
Jan.	55,198	76,172	110,244	46,296	45,312	41,256	100,434	121,484	151,500
Feb.	58,035	91,186	108,955	46,935	42,166	43,316	104,970	133,352	152,271
March	61,822	85,740		43,567	49,600		105,389	135,340	
April	55,261	92,757		41,905	38,963		97,166	131,720	
May	64,360	94,563		40,303	44,181		104,663	138,744	
June	60,460	89,250		40,907	47,233		101,367	136,483	
July	64,900	98,469		38,062	40,587		102,962	139,056	
Aug.	60,870	96,148		37,360	40,937		98,230	137,085	
Sept.	62,078	97,829		42,464	37,966		105,542	135,793	
Oct.	64,089	97,452		52,930	42,804		117,919	140,256	
Nov.	69,385	101,034		47,311	37,076		116,696	138,110	
Dec.	72,520	100,130		52,020	47,938		124,540	148,068	

(Rubber Association of America figures raised to 100%.)

Stock of Crude Rubber in London

(No. of tons in Wharves and Warehouses, including Latex)

At end of:	1920	1921	1922	1923	1924	1925	1926	1927
Jan.	19,300	56,573	67,252	73,498	57,460	27,172	9,994	54,994
Feb.	18,329	59,439	67,623	70,483	56,732	23,425	10,004	58,826
Mar.	18,969	63,913	66,670	63,438	55,647	18,104	13,127	63,055
Apr.	20,072	68,759	68,637	58,770	54,559	12,949	18,773	66,897
May	20,921	70,403	70,146	54,439	51,615	5,895	20,384	67,169
June	22,517	69,408	71,597	51,050	51,115	5,318	23,984	63,902
July	25,346	71,065	71,515	49,937	52,073	4,258	27,727	63,717
Aug.	30,674	73,211	72,112	58,427	49,700	4,619	30,165	64,491
Sept.	35,504	72,175	70,977	54,523	44,011	5,453	35,077	68,236
Oct.	41,743	69,229	68,536	58,891	37,523	5,086	42,138	69,569
Nov.	45,550	70,786	68,548	60,074	33,593	3,869	44,057	67,050
Dec.	50,652	69,792	72,299	60,246	29,488	5,697	48,918	.....

At End of Recent Weeks

	First Saturday	Second Saturday	Third Saturday	Fourth Saturday	Fifth Saturday
1927					
July	63,917	64,163	63,511	62,819	63,626
August	64,177	64,557	64,842	64,259	———
September	65,162	66,148	66,664	67,253	———
October	68,519	70,167	70,916	70,060	69,551
November	69,660	69,501	69,850	67,318	———
December	65,869	66,011	64,761	63,397	63,207
1928					
January	64,360	65,524	65,450	66,285	———
February	65,909	64,945	63,769	63,103	———
March	61,978	61,920	61,033	———	———
April					
May					
June					

Rubber in Singapore and Penang

(Stocks held by Dealers—Quantities in Long Tons)

End of	1926	1927	1928	End of	1926	1927	1928
Jan.	16,726	25,440	25,868	July	23,101	22,558	
Feb.	13,653	26,766	22,867	Aug.	23,362	25,764	
Mar.	18,389	27,844		Sept.	25,997	25,178	
Apr.	16,328	24,543		Oct.	26,614	25,790	
May	16,967	25,133		Nov.	25,486	28,369	
June	19,416	21,898		Dec.	26,443	25,798	

Rims Inspected and Passed in U. S.

(Tire and Rim Association Reports)

	Total	Per Cent Balloons		Total	Per Cent Balloons
1922	16,297,735	0.0	1925	26,001,664	66.8
1923	28,140,620	0.6	1926	24,199,524	78.8
1924	21,863,311	19.7	1927	19,700,003	79.1
1927			1928		
July	1,679,587	84.4	January	1,811,534	87.8
August	1,825,905	80.2	February	1,806,437	86.5
September	1,727,122	77.7	March		
October	1,354,924	81.4	April		
November	838,591	67.8	May		
December	1,134,421	80.0	June		

U. S. Consumption of Gasoline

(In Barrels of 42 Gallons)

MONTHS	1924	1925	1925	1927	1928
January	11,918,000	14,386,000	17,582,000	17,888,000	20,939,000
February	9,626,000	13,210,000	15,814,000	18,240,000	
March	10,961,000	14,890,000	19,302,000	22,464,000	
April	14,583,000	19,013,000	20,848,000	23,371,000	
May	15,889,000	20,459,000	24,213,000	26,579,000	
June	16,421,000	20,724,000	23,803,000	27,799,000	
July	18,610,000	22,879,000	24,752,000	29,784,000	
August	19,825,000	22,323,000	26,912,000	29,779,000	
September	16,871,000	20,177,000	22,929,000	28,409,000	
October	18,029,000	19,826,000	23,973,000	25,497,000	
November	16,607,000	18,024,000	20,618,000	24,400,000	
December	15,663,000	17,954,000	21,419,000	23,718,000	
TOTAL	185,003,000	223,865,000	262,165,000	297,928,000	20,939,000

U. S. Tire and Tube Statistics

(All Figures Represent Thousands)

AUTOMOBILE CASINGS

Figures for Recent Years

	1922	1923	1924	1925	1926	1927
Production	40,932	45,259	51,633	60,845	61,237	64,439
Shipments	39,987	45,204	50,120	59,262	59,002	64,059
Inventory[2]	6,132	5,772	7,427	8,142	10,456	10,264

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1925	1926	1927	1925	1926	1927	1925	1926	1927
Jan.	4,740	4,587	4,965	4,013	2,974	4,932	7,949	9,947	10,432
Feb.	4,908	4,865	5,095	3,924	3,436	4,458	8,928	11,164	11,075
Mar.	5,276	5,456	6,276	4,657	4,561	5,701	9,510	12,004	11,583
Apr.	5,341	5,346	6,299	5,498	4,980	5,701	9,088	12,461	12,122
May	5,467	5,023	6,151	5,954	5,211	5,657	8,611	12,343	12,462
June	5,418	5,422	6,202	6,737	5,724	6,253	7,243	11,968	12,462
July	5,587	4,950	5,087	6,298	6,337	5,973	6,421	10,592	11,326
Aug.	5,607	5,872	5,752	4,760	6,744	6,393	7,261	9,732	10,721
Sept.	5,007	5,706	4,822	4,569	6,040	5,717	7,681	9,318	9,722
Oct.	4,505	5,103	4,773	5,580	4,544	4,799	6,670	9,917	9,665
Nov.	4,229	4,324	4,502	3,671	3,733	4,306	6,955	10,297	10,136
Dec.	4,760	4,683	4,497	3,601	4,718	4,165	8,142	10,456	10,264

AUTOMOBILE INNER TUBES

Figures for Recent Years

	1922	1923	1924	1925	1926	1927
Production	50,850	60,116	70,706	82,614	76,618	70,823
Shipments	49,673	59,072	68,016	81,004	71,591	72,896
Inventory[2]	7,643	8,425	11,052	11,313	16,200	13,692

Figures for Recent Months

	PRODUCTION			SHIPMENTS			INVENTORY		
	1925	1926	1927	1925	1926	1927	1925	1926	1927
Jan.	6,343	6,809	5,337	5,576	3,723	6,016	11,570	14,361	15,585
Feb.	6,339	6,825	5,658	4,971	3,736	5,120	13,023	17,090	16,075
Mar.	7,000	7,030	7,184	5,711	4,987	6,157	14,236	19,131	17,096
Apr.	6,851	6,554	7,373	6,704	5,051	6,359	13,618	20,674	17,801
May	6,846	6,149	6,787	8,040	6,304	6,140	12,501	21,141	18,389
June	6,942	6,171	6,306	9,032	6,898	6,832	10,409	20,243	17,858
July	7,544	5,729	5,284	9,140	8,569	7,070	8,635	17,267	16,004
Aug.	7,618	7,424	6,480	6,923	9,579	7,983	9,271	15,462	14,664
Sept.	7,254	7,590	5,651	6,665	7,762	6,758	9,950	15,312	13,511
Oct.	6,612	6,208	5,065	7,845	5,474	5,024	8,726	15,929	13,539
Nov.	6,266	4,852	4,775	5,406	4,045	4,723	9,941	16,604	13,585
Dec.	6,999	5,277	4,969	4,991	5,463	4,712	11,313	16,200	13,692

(1) Rubber Association of America figures, raised to 100%. The Association estimates its figures to be 75% representative or complete when issued and that basis has been accepted when preparing the statistics in this table.

(2) Held by manufacturers at end of period indicated.

Automobile Production

	United States			Canada			
	Total	Passenger Cars	Trucks	Total	Passenger Cars	Trucks	Grand Total
1921	1,595,304	1,452,902	142,402	66,246	61,098	5,148	1,661,550
1922	2,547,208	2,302,923	244,285	102,053	94,904	7,149	2,649,261
1923	4,020,255	3,631,728	388,527	146,438	129,228	17,210	4,166,693
1924	3,600,918	3,203,049	397,869	135,246	117,765	17,481	3,736,164
1925	4,265,704	3,760,459	505,245	161,389	139,311	22,078	4,427,093
1926	4,298,799	3,808,753	490,046	205,092	164,483	40,609	4,503,891
1927							
Jan.	238,926	199,650	39,276	15,376	11,745	3,631	254,302
Feb.	304,758	264,171	40,587	18,655	14,826	3,829	323,413
March	394,430	345,911	48,519	23,250	19,723	3,527	417,680
April	404,743	357,009	47,734	24,611	20,890	3,721	429,354
May	404,099	357,148	46,951	25,708	21,991	3,717	429,807
June	321,959	278,728	43,231	19,208	16,470	2,738	341,167
July	268,474	236,866	31,608	10,987	8,719	2,268	279,461
Aug.	308,807	274,378	34,429	12,526	10,139	2,387	321,333
Sept.	260,420	226,440	33,980	11,262	8,681	2,581	271,682
Oct.	219,712	183,041	36,671	7,791	6,236	1,555	227,503
Nov.	134,381	109,742	24,639	6,617	5,173	1,444	140,998
Dec.	133,178	105,784	27,394	3,435	2,277	1,158	136,613
TOTAL	3,393,887	2,938,868	453,019	179,426	136,870	32,556	3,573,313
1928							
Jan.	225,039	199,032	26,007	8,463	6,705	1,758	233,502
Feb.	323,368	290,830	32,358	12,504	10,315	2,189	335,872
March							
April							
May							
June							
July							
Aug.							
Sept.							
Oct.							
Nov.							
Dec.							

Exports of Crude Rubber from Principal Producing Countries

(*Long Tons*)

	BRITISH MALAYA[1]							DUTCH EAST INDIES[5]							
	Gross Exports	Imports	Gross Exports Minus Imports	Ceylon[2]	India & Burma[3]	Sarawak[4]	British North Borneo[3]	Siam[4]	Java & Madura	Sumatra E. Coast	Other D.E.I.	Indo-China[3]	Amazon Valley[6]	All Other[6]	World Total[7]
1923	252,016	70,432	181,584	39,971	6,416	5,705	4,237	1,718	32,930	46,344	57,822	5,067	16,765	7,856	406,955
1924	259,706	108,524	151,182	39,997	7,697	6,699	4,621	2,962	42,446	54,497	80,347	6,688	23,165	9,065	429,366
1925	316,825	158,022	158,803	49,566	10,082	5,424	5,377	5,377	46,757	65,499	120,626	7,881	25,298	13,797	517,523
1926	391,328	151,243	240,085	58,962	9,874	9,155	6,079	4,027	52,186	71,413	121,231	8,203	24,298	16,017	621,530
1927	371,322	182,755	188,567	55,356	11,321	10,923	6,308[e]	5,562	55,297	77,815	142,171	8,645	28,768	14,968	*605,701
1926:															
Jan.	30,452	10,237	20,215	4,246	1,273	416	472	289	4,110	6,239	8,165	866	1,284	1,805	49,380
Feb.	30,440	8,306	22,134	5,120	725	488	450	253	4,524	5,717	6,854	554	2,759	1,978	51,556
Mar.	35,012	14,800	20,212	5,177	1,113	792	561	418	4,527	5,566	11,984	573	2,126	1,899	54,948
Apr.	23,727	10,565	13,162	3,766	590	679	374	293	4,226	4,598	6,285	410	2,318	1,529	38,230
May	31,231	10,604	20,627	3,944	691	927	410	279	4,440	5,358	8,737	502	1,353	1,464	48,732
June	30,624	11,764	18,860	4,208	452	779	512	275	4,444	6,125	10,614	549	1,213	1,279	49,310
July	28,824	15,280	13,544	4,422	938	911	498	439	4,618	5,612	13,112	1,521	1,565	1,148	48,328
Aug.	34,625	13,595	21,030	5,666	521	890	476	316	4,132	5,699	10,390	378	1,888	1,097	52,483
Sept.	35,913	13,972	21,941	6,015	651	888	689	457	4,065	6,568	11,391	681	2,156	822	56,824
Oct.	39,367	15,203	24,164	5,672	634	805	473	385	4,058	6,998	11,491	661	1,904	1,023	58,268
Nov.	34,302	12,201	22,101	4,228	1,110	685	547	285	3,988	5,816	9,422	718	1,911	1,259	52,070
Dec.	36,811	14,716	22,095	6,498	1,176	895	617	338	5,054	7,117	12,786	790	3,821	714	61,901
1927:															
Jan.	34,946	14,995	19,951	6,697	921	959	585	304	4,187	6,706	10,690	941	2,885	981	55,807
Feb.	27,523	11,607	15,921	3,571	1,469	552	445	360	4,078	6,526	10,535	675	2,082	1,098	47,312
Mar.	41,346	17,464	23,882	7,142	1,124	997	639	432	5,657	7,004	12,905	733	3,203	1,791	65,509
Apr.	29,041	13,069	15,972	3,349	723	984	452	526	4,666	5,531	10,197	557	2,374	1,495	46,826
May	31,393	15,491	15,902	3,124	760	786	415	348	5,430	5,529	13,410	586	2,431	1,207	49,928
June	32,607	14,706	17,901	3,348	856	1,100	539	409	4,818	5,518	9,109	772	1,030	1,706	47,106
July	23,947	12,697	11,250	4,018	827	859	544	333	4,771	6,142	11,566	519	1,713	1,115	43,657
Aug.	30,371	17,105	13,266	5,357	688	1,133	623	546	4,355	6,682	12,440	716	2,004	969	48,779
Sept.	29,835	12,095	17,740	4,911	479	645	566	498	3,635	5,957	9,853	497	2,474	1,213	48,468
Oct	29,846	15,801	14,045	5,245	802	721	500*	542	3,810	7,755	13,633	775	2,704	939	*51,471
Nov.	28,277	19,860	8,417	4,464	1,277	1,241	500*	600	4,127	6,587	14,395	683	2,547	1,627	*46,465
Dec.	32,185	17,865	14,320	4,130	1,395	946	500*	664	5,763	7,878	13,438	1,191	3,321	1,444	*54,990
1928:															
Jan.	27,731	16,618	11,113	4,352	1,605	842	500*	525	4,851	7,988	11,360	720	2,273		
Feb.	28,813	12,911	15,902	4,353		667	500*	536				723	1,612		

(1) Mayalan net exports cannot be taken as production, since imported rubber is largely wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 115 tons in 1923, 1,117 in 1924, 3,618 in 1925, and 3,263 in 1926. (2) Ceylon Chamber of Commerce statistics until 1926; rubber exported as latex is not included—such shipments were equivalent to 18 tons in 1923, 93 tons 1924, 6 tons 1925, and about 20 tons in 1926. (3) Official statistics. (4) Imports into Singapore and Penang. (5) Exports from "Other D.E.I." are chiefly wet native rubber, which is reduced about one-third in weight by remilling; rubber exported as latex is not included which on a basis of 3½ pounds per gallon amounted to 2,342 tons in 1923, 1,008 tons 1924, 2,239 tons 1925, and about 60 tons in 1926. (6) Calculated from official import statistics of principal consuming countries, viz., United States, United Kingdom, France, Germany, Italy, Belgium and Netherlands. This figure includes guayule rubber. (7) This total includes the third column for British Malaya, "Gross Exports minus Imports," and all the figures shown for the other territories. *Figure is provisional; final figure will be shown immediately it becomes available.

Net Imports of Crude Rubber into Principal Manufacturing Countries

(*Long Tons*)

	United States*	United Kingdom	France (h)	Germany	Canada (ac)	Japan (ac)	Italy	Russia (ce)	Australia (cd)	Belgium (d)	Netherlands	Scandinavia (abcdf)	Spain (g)	Czechoslovakia (abcd)	World Total
1919	236,977	42,671	17,685	5,584	6,395	9,753	9,894	75	1,002	3,995	2,771	3,149	2,418	9	342,378
1920	248,762	56,844	13,885	11,890	11,746	5,297	6,123	62	1,815	3,840	5,510	2,292	2,008	567	370,641
1921	179,678	42,087	15,135	21,920	8,124	21,713	3,906	165	1,014	1,705	1,022	1,279	2,245	569	300,562
1922	296,267	11,724	24,352	27,546	9,207	15,984	6,430	2,493	2,643	172	-3,807	1,778	589	567	395,885
1923	300,372	12,700	27,392	18,519	13,277	15,372	8,489	2,986	1,649	2,184	792	2,528	630	1,128	408,018
1924	317,747	-11,550	30,446	22,727	14,299	19,571	8,764	2,346	3,124	2,688	-807	3,178	944	1,370	414,847
1925	381,815	4,061	32,956	33,937	19,683	11,117	11,412	7,088	4,757	2,930	875	3,149	1,155	1,558	516,493
1926	395,667	34,865	34,240	22,775	20,229	18,125	9,809	6,529	9,021	2,498	2,670	4,046	1,299	1,870	613,643
1926:															
January	40,345	6,886	2,832	703	2,188	892	760	332	438	76	163	303	89	134	56,141
February	31,435	3,114	3,063	1,113	1,865	741	1,041	643	512	143	88	397	145	75	44,375
March	40,316	8,907	3,941	1,342	2,079	864	1,037	832	547	129	227	377	109	161	60,868
April	33,416	8,275	4,121	1,781	1,615	1,868	865	402	505	71	93	335	130	193	53,670
May	28,705	6,773	2,519	1,848	1,239	1,010	705	200	468	186	241	225	60	192	44,371
June	23,795	5,894	2,196	1,655	1,188	1,465	1,070	983	636	269	215	303	123	103	39,895
July	34,266	6,768	2,352	2,202	1,552	1,447	800	132	702	295	480	292	121	115	51,524
August	26,081	7,327	2,457	2,110	1,888	1,284	796	655	1,275	303	594	326	90	151	45,347
September	35,675	8,843	1,774	2,029	1,855	1,922	819	472	1,241	283	429	317	91	138	55,388
October	28,110	8,082	3,376	2,423	1,865	2,396	645	585	1,004	301	2	360	100	121	49,370
November	37,673	9,247	2,719	3,007	1,548	3,380	832	568	916	194	-18	358	90	181	60,695
December	35,850	4,749	2,890	2,562	1,847	856	439	725	777	248	156	443	151	306	51,999
1927:															
January	41,815	10,192	3,284	2,481	1,936	1,227	672	803	929	296	192	316	139	100	64,382
February	25,886	7,692	3,263	3,103	2,620	1,902	601	907	460	502	152	336	146	210	47,780
March	32,752	9,049	2,050	3,475	3,760	1,578	852	784	780	454	86	385	137	127	56,269
April	44,627	7,875	2,310	2,393	1,509	2,181	781	1,972	762	448	58	280	177	218	65,541
May	33,736	2,896	2,006	3,380	2,519	1,084	918	887	694	626	-57	335	155	223	49,402
June	31,270	2,282	2,387	3,632	2,086	798	942	1,506	557	583	-17	243	164	183	46,616
July	35,719	1,116	2,384	2,899	2,104	1,505	1,007	415	900	429	66	227	177	256	49,184
August	31,001	3,463	2,795	3,119	2,013	1,970	1,274	386	650	604	-63	312	138	123	47,785
September	29,801	7,800	1,956	2,891	1,850	2,025	684	518	772	552	-33	451	155	272	49,694
October	27,671	5,888	3,479	4,202	1,790	1,966	1,021	1,075	908	465	156	401	153	363	49,538
November	36,123	1,687	3,661	4,209	1,916	1,575	1,167	1,312	836	749	298	474	246	317	54,570
December	28,082	309	4,696	3,108	2,302	2,710	1,462	1,453	1,242	784	-202	514	268	300*	47,028
	398,483	60,249	34,271	38,892	26,405	20,521	11,381	12,018	9,490	6,492	636	4,224	2,055	2,672	627,789
1928:															
Jan.	37,552	1,921		2,485	2,290	1,372		572		589	52	261			
Feb.															

a—Including gutta percha. b—Including balata. c—Re-exports not deducted in monthly statistics. d—Including some scrap and reclaimed rubber. e—United Kingdom exports to Russia, and beginning with October, 1927, exports from the United States to Russia. f—Including Norway, Sweden, Denmark and Finland. g—United Kingdom and French exports to Spain except in years prior to 1925. h—French imports have been reduced 12 per cent in order to eliminate imports of gutta percha and to reduce to basis of net weight. *United States imports of guayule are not included in this compilation: such imports amounted to 4,305 tons in 1926 and to 4,988 tons in 1927.

BOOK REVIEWS

OXYNONE. Accelerator and Anti-oxidant. Introductory Booklet. Published by The Rubber Service Laboratories Company, Akron, Ohio. February, 1928. 46 pp.

This booklet describes and tabulates the numerous tests made in the development and determination of the suitability of Oxynone for use in rubber compounding. As stated in the introduction, "part of the results obtained are informatory and lead to further valuable knowledge. Other parts are negative." The positive results are given in detail so that the factory chemist is spared a great deal of individual testing of this material and its uses.

Among the information included are: curing characteristics; Oxynone in various tread stocks; with D.P.G.; in heel stocks; effect of carbon black and stearic acid; Oxynone used in conjunction with other accelerators and anti-oxidants; tube and carcass stocks, etc.

THE BEHAVIOR OF PRICES. A Report of an Investigation by Frederick C. Mills, of the Staff of the National Bureau of Economic Research, Inc. Published by the National Bureau of Economic Research, Inc., New York. 1928. 598 pp.

This very exhaustive and ambitious study is a search for uniformities and regularities in the price systems prevailing in a wide range of commodities.

The first part of the book is concerned with securing an adequate basis of measures by which to describe the behavior of prices of individual commodities. The later part of the book is the development of such measures and the behavior of prices in combination. A commodity index is appended by which all references in the book to specific commodities, their variability of prices, their trend over a period of years; the length of their own business cycle and how they act during general price movements, can be traced.

Criticism may be made of the grade of rubber, i. e., Para island, fine—used as the basis of measure throughout the report and query as to why a standard commercial grade of plantation rubber was not included might be asked, but on the whole the efforts of the author are to be commended in the execution of such a prodigious work.

The price of the book is $7.00. It might be incidentally mentioned that the National Bureau of Economic Research is its own publisher and prints and distributes its reports at prices just sufficient to cover publication expenses, all the research costs being defrayed from contributions to the Bureau's general fund.

THE 1928 OUTLOOK FOR AUTOMOBILE TIRE SECURITIES. Special Supplements I and II. Published by the Standard Statistics Company, Inc., New York. March, 1928.

ANALYSIS I—Position of the Industry.

The present pamphlets are two of a series to be prepared giving financial analyses of various rubber manufacturing company securities which are active on the exchange markets. The first of the series treats in general with the position of the industry and the relation of the fluctuations in crude rubber prices to the value of rubber manufacturing company shares on the market. While frankly skeptical of the outcome in the crude rubber situation the general conclusion is made that "under certain conditions tire stocks offer excellent media for short-term speculative operations."

ANALYSIS II—Firestone Tire & Rubber Co.

The second of this series is an elaborate analysis of the financial position of the above company and the possibilities of its common stock issues as an attractive investment. The pamphlet calls attention to the fact that the company "has, by long odds, been the most profitable of the automobile tire manufacturers," and shows that over a period of 14½ years the average earnings per share as of the value in 1914 has been $132.73, and that the average cash dividends per annum have totaled $39.50. As a conclusion to the analysis it is said that "the long-term possibilities of such a stock are incalculable, assuming that the present large blocks of holdings remain intact. Logical reasoning leads to a line of speculation which must allow the possibility of greatly higher prices at some future date. The outstanding point in connection with the Liberian plantation, and likewise in connection with the tire and textile manufacturing facilities . . . is that the Firestone company is steadily building up an expanding equity behind its common shares."

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